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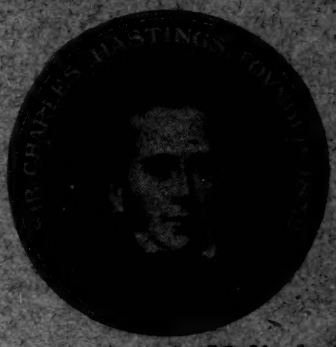

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CONTRACTURES OF THE HAND AFTER WOUNDS OF THE UPPER LIMB.

BY

W. M. MACDONALD, M.D.Edin., B.Sc.New Zealand,

MÉDECIN-TRAITANT, NEUROLOGICAL CENTRE, LE MANS.

During the early period of the war contractures occurring in the limbs after wounds, without electrical changes in the muscles, were looked on as hysterical, and were treated by disciplinary measures, which, however, failed in a large percentage of cases. Then some doubt arose in the minds of neurologists as to the correctness of this opinion, and Sicard, Meige, Mdme. Benisty, Claude, and others published cases which they could not class as hysterical. Recently Babinski[1] has published an article

Case I.—D. A. Sprained wrist from fall, June 25th, 1915. Contracture one month later (accoucheur's hand). Contracture of trapezius and slight atrophy of deltoid on same side. Severe pain in neck and shoulder for eight days after the accident. Anaesthesia in the territories of spinal roots C vi, C vii, and D i, light hypoaesthesia of C viii.

in which he frankly describes these cases as reflex, and speaks of an exaltation of the anterior cornual cells. He says, further, that as these cases are organic in nature they should not be submitted to certain disciplinary procedures which are justified in hysterical cases. But this explanation appears merely to replace one difficulty by another. In the case of a group of muscles which remain firmly contracted during six, twelve, or eighteen months and which contract anew in twenty-four hours after having been straightened and kept in plaster for four weeks, is our curiosity appeased by the substitution of "reflex" for "psychic," and by the transfer of the unknown quantity from the cortical cells to those of the anterior cornua? Careful search for the organic factor ought to be made in all these cases.

Case II.—D. S. Bullet wound of left arm, September 25th, 1915. Immediate contracture of the fingers (accoucheur's hand). Thumb contracted some weeks later. Spinal root anaesthesia (C iv, C v, C viii, and D i). Pressure on Erb's point causes tingling in the little and ring fingers.

In the neurological service at Le Mans we have at present some 450 cases under treatment, amongst which are 25 of pure contracture of the hand. Others are complicated by fibrous retraction of the muscles, by neuritis *a frigore*, or by destruction of muscle and tendon. Several cases of contracture of the elbow and shoulder have not been included in the present series. The contractures have followed on wounds, which were mostly slight, of the arm (8), forearm (9), wrist (3), and hand (4), while in one case the original injury consisted merely of a sprained wrist. In no fewer than 16 cases the patient states that his hand contracted immediately or very shortly after the infliction of the wound; in 4 cases the contracture occurred in two to four weeks, while in the remainder it took some months to become fully established.

A detailed examination of these cases revealed the interesting fact that in all of them there was evidence of a neuritis, such as localized anaesthesia and trophic changes, tenderness of nerve and muscles, atrophy, etc. There was anaesthesia in the territory of the ulnar nerve in 10 cases, of the ulnar and median in 1, and in the median and musculo-spiral in 1. In 5, or possibly 6, cases the anaesthesia was of the spinal root type, and in several of the ulnar cases it mounted much higher in the arm than the classical territory of the nerve, suggesting that these cases were possibly due to lesions of the first dorsal root. In 3 cases there was anaesthesia of the hysterical type mounting respectively to the mid-forearm, the elbow, and the shoulder. In the cases with hysterical anaesthesia and also in the spinal root cases the nerve

Case III.—C. R. Bullet wound of left wrist, with fracture of fourth metacarpal, September 7th, 1914. Contracture set in very shortly after—accoucheur's hand, with adduction of thumb and little finger and slight flexion of wrist; third and fourth fingers in hyperextension at the first interphalangeal joint; reduction difficult and painful. Brachial plexus hypoaesthesia (D i).

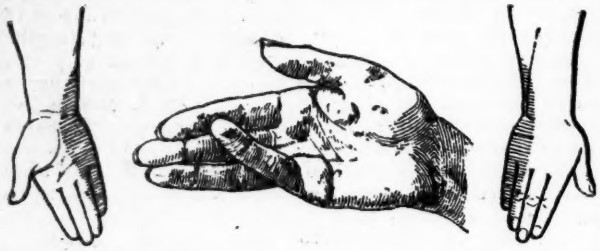
trunks were tender and the trophic changes were practically the same as in the other cases. In 4 other cases the anaesthesia was of an indefinite character, chiefly affecting the hand and not possessing an anatomical distribution. These were probably cases in which partial regeneration had taken place, as was observed in several during the course of treatment, the anaesthesia changing to paraesthesia and the affected zones diminishing at the periphery. In 8 cases the nerves were tender above the wound, and in 10 prolonged suppuration had occurred, so that an ascending infective neuritis is often responsible at least for the persistence of the contracture. In other cases the nerve is injured either directly by the projectile or indirectly by the shock of its passage. In the spinal root cases the brachial plexus is stretched or jarred. In one of these the patient stated that his arm was projected violently backwards when he received the wound.

As will be seen by the diagrams the anaesthesia, or rather hypoaesthesia—for it is rarely complete, pin-prick being felt as a light touch—does not conform in all cases to the classic type. The line of demarcation between the normal and hypoaesthetic areas is usually abrupt, and there is an absence of the transitional zones commonly found after section of a nerve. In 5 of the 11 ulnar cases, the hypoaesthesia mounted more than halfway to the elbow and the digital distribution varied from 1½ to 3 fingers, the palmar and dorsal surfaces being equally affected in each case. Most forms of sensation were usually affected; thus light touch was not felt, pressure was felt as light touch, pin-prick as touch, the recognition of heat and cold was diminished and the

Case IV.—G. N. Bullet wound of right hand with fracture of third metacarpal, June 17th, 1915. Contracture two months later (accoucheur's hand); marked hypertrichosis, myotonia of ulnar and hypothenar eminences, ulnar hypoaesthesia and tenderness of nerve.

circles of Weber were enlarged. Spontaneous pains occurred in 9 cases, and in nearly all pressure on the affected nerve in the arm or forearm caused distal tingling in its cutaneous territory.

The muscles most commonly affected were the interossei

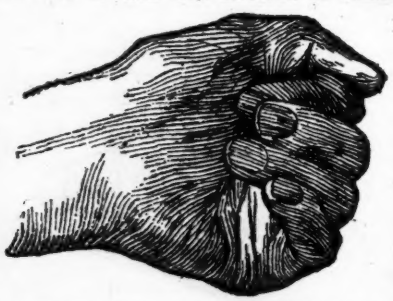


CASE V.—G. M. Bullet wound of right arm near shoulder, April 9th, 1915. Arm contracted immediately against the chest, elbow at a right angle, and fingers in extension. Later the little finger became strongly adducted. Thumb remained free, but shows trophic changes. Ulnar hypoaesthesia.

with slight flexion at the metacarpo-phalangeal, and extension at the interphalangeal joints. Frequently the little finger was strongly adducted towards the mid-line of the hand, and lay in front of the others. Sometimes the forefinger and thumb were also adducted (accoucheur's hand). Less commonly the superficial flexors of the ring and little fingers or of all four fingers were affected, producing flexion of the fingers into the palm, and in one case

CASE VI.—D. F. Shell wound of right forearm, September 23rd, 1915. Two weeks later contracture of third, fourth, and fifth fingers in extension, with slight flexion on the metacarpals; fifth finger in forced adduction. Anaesthesia of the three fingers affected and the ulnar region of the hand. Tingling in the fourth and fifth fingers when the ulnar nerve is compressed at the elbow.

the flexor profundus of the middle and ring fingers was contracted, giving rise to a curious deformity (Case XI). The flexor carpi ulnaris and palmaris muscles were also sometimes affected. Although the adductor pollicis is the most powerful of the interosseous muscles, the thumb was included only in eight cases, the explanation being that the thumb is necessary for eating and cigarette-rolling, and so it was not allowed to remain contracted. The muscles affected have usually a decreased faradic and an increased mechanical excitability, but the marked myotonia with delayed contraction on percussion which was demonstrated in several cases by Babinski at the recent Conference on War Neurology at Paris could not be elicited in any of these cases. In about half the cases there was a mild degree of myotonia with slightly delayed contraction. In eight cases there was atrophy of the hypothenar, and to a lesser degree of the thenar, eminences.



CASE VII.—B. L. Bullet wound of left forearm, February 1st, 1915; suppurated four months. Hand firmly closed the same day, and has remained contractured ever since with flexion into the palm of all four fingers and adduction of thumb. Ulnar nerve tender in the arm; pressure on it in all its course causes tingling in the little and ring fingers. Ulnar hypoaesthesia.

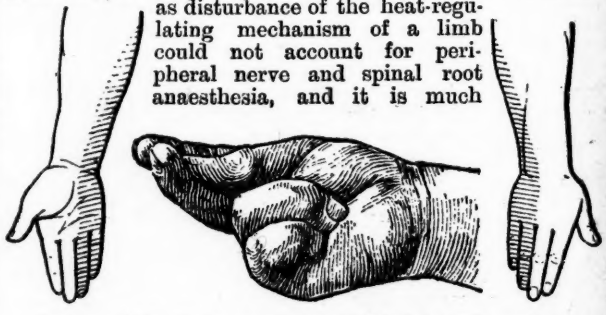
All cases showed trophic changes, and in most they were well marked. The hand is cold and blue or marbled. The patient complains that it is too cold in cold weather and too hot in hot. Babinski has noted a difference of 7° or 8° C. between the two hands. There is excessive perspiration in the area of the nerve affected, and in some cases it is extremely fetid. The fingers are atrophied and pointed. The skin is smooth and is attached firmly over the interphalangeal joints, the folds of which are effaced. The nails are rigid, brittle, waxy in tint, incurved, and rounded. The nail in its rapid growth drags the skin with it so as to form a pad under its free end. The phalanges may show rarefaction under the x rays, and there is a tendency in some cases to ankylosing arthritis with ulnar deviation of the fingers. Most of these trophic changes are commonly present, but they are not all found in each case.

CASE VIII.—S. M. Bullet wound of right arm, June 20th, 1915. Contracture of fingers in flexion one week later, thumb remaining free; easily reduced until August 23rd, when an operation for liberation of the ulnar nerve was performed, after which reduction became very difficult. Marked retraction of the palmar fascia as seen in sketch. Ulnar anaesthesia and tenderness of nerve.

The tendon reflexes, which are usually altered in reflex nervous troubles, are rarely exaggerated, but Babinski has found that patellar clonus occurs under chloroform in some cases of contracture of the lower limb, and he takes this as definite evidence of the reflex origin of the contracture from irritation of the anterior cornual cells. He further develops this line of argument by assigning a similar causation to all other pithiatic cases of contracture or flaccid paralysis without reaction of degeneration, on the ground that in every other respect they are similar to the cases that do possess this pathognomonic sign of reflex spinal action. By pithiatic he means irresponsive to oracular suggestion or psychotherapy.

CASE IX.—R. S. Contracture in flexion of the little and ring fingers, of twenty years' standing. Supervened on paralysis of the arm caused by a lightning stroke. Slight hypoaesthesia of the dorsum and palm of the hand except in the region of the first metacarpal. Marked retraction of the palmar fascia.

He suggests further that the reflex action may affect chiefly the thermic control of the limb and in this way produce the trophic and other changes. But, in those cases at least in which definite evidence of reflex action has not been induced by chloroform narcosis, it is more probable that these changes are directly due to a neuritis, as disturbance of the heat-regulating mechanism of a limb could not account for peripheral nerve and spinal root anaesthesia, and it is much more simple to attribute the thermal changes to a neuritis, of which we have definite proof in the tenderness of the nerve, localized anaesthesia, etc. It is perhaps possible that the neuritis and all the other changes may be due to a vasomotor reflex affecting the nutrition of the nerves and muscles, similar to that which produces atrophy of the rectus femoris very shortly after injuries near the knee-joint, and even near the ankle.



CASE X.—M. D. Shrapnel wound of right wrist, September 8th, 1914; fourth and fifth fingers contracted in flexion three days after; reduction easy. Ulnar hypoaesthesia mounting almost to the elbow.

This condition is exceedingly common, sets in very rapidly and is accompanied by diminished faradic and galvanic excitability without polar change. Then again in phthisis we have a reflex atrophy of the trapezius, rhomboids and pectorals. But on the whole it seems more rational to attribute all the sensory, motor, and trophic phenomena to the neuritis.

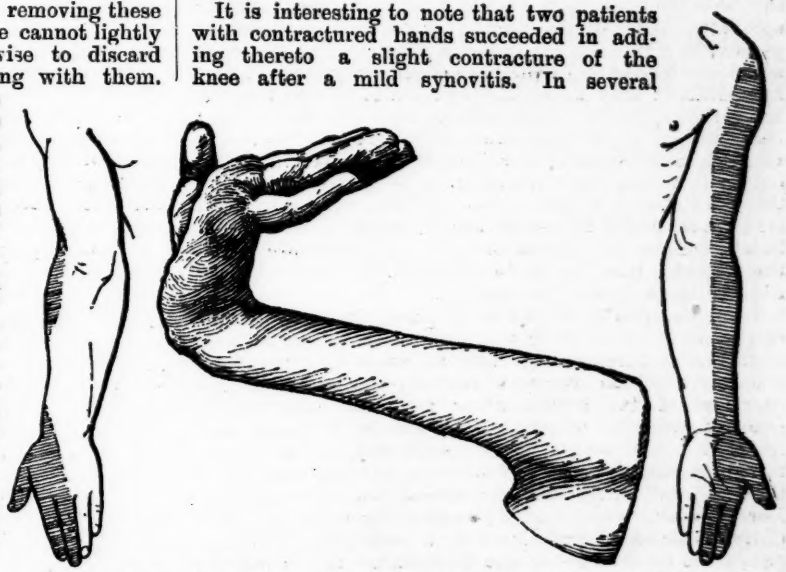
CASE XI.—B. A. Bullet wound of right arm, June 29th, 1915. Contracture of the deep flexors and interossei of the third and fourth fingers a few days later. Hyperextension at the first and acute flexion at the second interphalangeal joint. Reduction easy but accompanied by a marked click as if the fingers worked on springs. Ulnar anaesthesia mounting two-thirds of the way to the elbow Trophic changes limited to slight cyanosis and excessive sweating.

It is obvious, however, that Babinski is right in removing these cases from the hysterical class. Yet one cannot lightly dismiss the mental factor, nor is it wise to discard entirely disciplinary measures in dealing with them. They rarely occur in civilians. One soldier with a contracture of the thumb alleged that it began three years ago. One of the present series of cases (No. IX) was a civilian who came to the hospital for consultation with a contracture of the fourth and fifth fingers of twenty years' standing which had supervened on paralysis of the arm following a lightning stroke. But these are cases of extreme rarity and are not commonly found in civil practice. Again, contractures do not occur in officers and rarely in non-commissioned officers. They develop after slight and rarely after severe wounds as with all functional conditions. The thumb is rarely affected. They occur more commonly in men who come from certain districts, and, lastly, they are specially prone to occur in certain hospitals where the atmosphere is suited to the culture of functional troubles.

On the other hand, they often fail to respond to psychotherapy, they persist both in natural and in drunken sleep, they yield only to deep chloroform anaesthesia, and, as Babinski has pointed out, they return along with or even before the tendon reflexes after anaesthetization. It is evident, therefore, that we have to deal with both an organic and a mental condition.

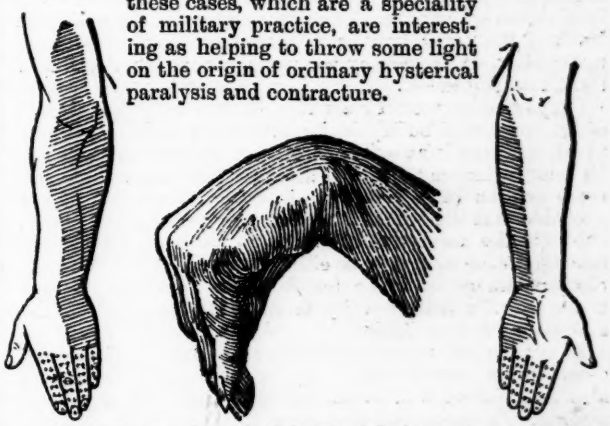
In discarding the purely hysterical hypothesis, however, it is not necessary to invoke the assistance of reflex action when we have evidence of neuritis. Contracture of this intensity is not an ordinary feature of neuritis, but military contracture is not an ordinary condition. What probably happens is that immediately or shortly after the wound the muscles contract from irritation of the nerve. This is probably very common and is in most cases overcome either by the patient or his attendant. Dr. Clunet, of the *Provence*, in the very interesting account that he gave at the Paris Neurological Congress of the events which followed on the torpedoing of the vessel, stated that next day he found some of the survivors from the rafts half-dazed and with all four limbs firmly contracted in flexion. He cured them all by flagellation, but there is no doubt that if they had been taken then and there under the wing of Red Cross ladies some of them at least would have remained contractured for months. An interesting case is that of a French surgeon who was shot through the lower jaw, and who found that by firmly contracting his masseters he could keep the fragments in position without a bandage. The contracture was well established in several hours. A month later, when he wished to decontracture himself, he found that he could not do so, and it took him two months of hard work before he could open his jaws freely. In the case of the common soldier with perhaps an inherited nervous disability, and with the call of the trenches setting up a negative chemio-taxis, there is an incentive for the patient not to make the effort at decontracture, with the result that the spasm persists. The irritation of the neuritis supplies the thorn which probably exists in all functional motor troubles, and which prevents the perverted mentality from resuming its normal tenor.

It is interesting to note that two patients with contractured hands succeeded in adding thereto a slight contracture of the knee after a mild synovitis. In several cases of disturbance of the gait after slight wounds, of false shortening of the lower limb, of knees and hips which work as if on springs, of contractured club-foot following slight sprains, I have found bands of anaesthesia, most commonly in the territory of the external popliteal. All these cases, which are a speciality of military practice, are interesting as helping to throw some light on the origin of ordinary hysterical paralysis and contracture.



CASE XIII.—B. N. Shell wound of left forearm, September 18th, 1915. Contracture of the hand and fingers in forced extension two weeks later. Brachial plexus hypoaesthesia (C V, C VI, C VIII, and partly C IV and C VII).

CASE XII.—V. H. Forefinger amputated at the second phalanx by a bullet, September 9th, 1914. Fingers began to contract the same day. Contracture established in eight days with the fingers hyperextended and widely separated, wrist in acute flexion, hand very rigid, reduction impossible. Well marked atrophy of the long supinator, radials, extensors, and flexors, and to a lesser degree of the triceps; faradic hypoexcitability of all these muscles. Muscles of the hand not atrophied. General anaesthesia of the upper limb mounting to the shoulder. Ulnar and radial nerves sensitive.



CASE XIV.—S. N. Bullet wound of the left forearm, April 30th, 1915. Contracture, two weeks later, of the wrist and elbow in flexion and extreme pronation; fingers flexed on hand with all the phalanges in extension; thumb free; marked hypertrichosis; pressure on ulnar nerve in all its course from axilla to wrist causes tingling in the little and ring fingers. Irregular ulnar anaesthesia (possibly C VII and D I); hypoaesthesia of the fingers very marked.

Treatment is disappointing, but the best results are obtained by strong hot faradic baths (with metronome), followed by massage, manipulation, and re-education, by

frequent stimulation of the hypoaesthetic areas with a strong coil and metal brush, and by strictly limiting leave until some improvement is shown. It is not wise to keep them too long in plaster, as they develop a contracture of the opposing muscles.

For the sketches of the hands I am indebted to M. Arouy, orderly in the electrical service. A few typical diagrams of the alterations in sensibility have been added.

REFERENCE.

[1] *La Presse Médicale*, February 24th, 1916.

NOTE ON THE DISTANT EFFECTS OF RIFLE BULLETS; WITH SPECIAL REFERENCE TO THE SPINAL CORD.

BY JUDSON S. BURY, M.D.LOND., F.R.C.P.,
MAJOR R.A.M.C.(T.).

EXPERIENCE of gunshot wounds in the present war teaches that the effects of a high velocity bullet with rapid rotatory spin are rarely limited to the parts through which it passes; as a rule there is evidence either of indirect or of secondary lesions and sometimes of remote lesions. Thus, haemothorax may be caused by a bullet passing through the muscles of the chest without injury to the pleura; haemorrhage into the abdominal cavity, or even rupture of a viscus, by a bullet passing through the abdominal wall without penetration of the peritoneum. The passage of a bullet through the scalp which strikes but does not fracture the cranium may be followed by symptoms of an intracranial lesion; indeed, the effects of such concussion are sometimes quickly fatal owing to inhibition of the respiratory and cardiac centres in the medulla.

Paralysis, and anaesthesia of parts supplied by one of the nerves to a limb, may be set up by the passage of a bullet through the limb at some distance from the nerve which becomes affected—for example, the functions of the sciatic nerve are often affected by gunshot wounds of the thigh when it seems unlikely, from the position of the wound, that the nerve could have been directly injured. Under the heading "sciatiques télétrosiques" (τέλῆ, distant; τρῶσις, act of wounding), Lortat-Jacob, Sézary, and Ferrand[1] describe eight cases of traumatic sciatica produced by a projectile penetrating either the lower limb or the ileo-lumbar region without directly implicating either the sciatic nerve or the lumbo-sacral plexus. Such sciaticas may present the most diverse clinical types, from simple neuralgia to severe neuritis, characterized by paralysis, sensory disturbance, and loss of the knee-jerk. The symptomatology does not differ from that which is observed in cases in which the nerve is directly injured. In one of their cases which was operated on, the nerve was yellow and indurated, although it had not been in contact with the bullet and was not involved in scar tissue. The authors believe that a definite lesion of the nerve may be produced by the vibrations set up in adjacent tissues by the passage through them of a swift rotating bullet.

Of particular interest are the effects on the spinal cord of the passage of bullets in its immediate vicinity, in cases in which there is no evidence of direct injury to the cord. In some instances there was an impact of the bullet upon some portion of a vertebra; in others, however, it was probable that the bullet did not strike the bone, but passed through the tissues outside it. In both conditions the damage to the cord may be either severe or slight. Records of such damage are to be found in the Goulstonian Lectures recently delivered by Gordon Holmes,[2] and in the address by James Collier.[3]

In the first of the two following cases some of the dorsal spinal roots were severely injured; the spinal cord was also implicated, and it is probable that the bone was injured. In the second case the soft tissues were probably alone involved.

CASE I.

Lance-Corporal S. was admitted to the Stepping Hill Hospital, Stockport, on June 1st, 1915. He stated that on April 26th he was struck by a bullet which entered the back near the top of the left shoulder, and came out on the right side of the spine. He was unconscious for two or three days, could not hold his water for about a fortnight, and has suffered from severe pains in the back and sides since the injury. On examination the scars of the bullet wounds were observed, the scar of entrance being just above the spine of the left scapula, that of exit about two inches to the right of the tenth and eleventh dorsal spinous processes. The whole of the dorsal spine below the third vertebra was very tender to pressure, the greatest pain being produced by touching the sixth spinous process. The hyperaesthesia extended over the ribs on both sides, the area included between the fifth and eighth ribs being most affected. Partial anaesthesia to cotton-wool and pin-prick was detected over the back on the right side, between the seventh and the tenth ribs, and in front on both sides, from the fourth to the eighth rib. During inspiration the action of the lower intercostal muscles seemed to be impaired. The right leg was weak, and the dorsiflexors of the right ankle were nearly completely paralysed. The abdominal reflexes were normal. The knee-jerks were slightly exaggerated, the right jerk being the greater of the two. Slight ankle clonus and Babinski's reflex were obtained on the right side.

During the two months that the patient was in hospital the pains in the back and the sides and the hyperaesthesia persisted, though gradually lessening in intensity. The anaesthesia on the left side disappeared in a fortnight, that on the right side in about six weeks. The weakness of the dorsiflexors of the right ankle persisted. On August 24th the patient was transferred to the Calgarth Park Auxiliary Hospital, Windermere, and was under the care of Dr. John Mason, who has kindly kept me informed as to his condition. The patient still suffers from pain to the right of the spine and in the back of the right thigh. He is able to walk a mile, and is able to work a few hours daily in an office. The right knee-jerk is exaggerated, though less so than formerly. The right leg is weak, and the foot tends to drag along the ground.

The main points of interest in this case are: (1) The temporary incontinence of urine; (2) the implication of some of the dorsal roots; (3) the signs of a lesion of the right pyramidal tract, the fibres which convey impulses to the dorsiflexors of the ankle being chiefly affected.

CASE II.

Private G., aged 19, was admitted to St. George's Hospital, Stockport, on December 31st, 1915. He was shot in the back on December 1st, the bullet going in over the posterior border of the left scapula at the level of the sixth dorsal spine and out over the middle of the right scapula at the level of a line between the fourth and fifth dorsal spines. At the time he was shot he was standing on a firing step in a trench; he fell backwards, his feet remaining on the step and his back resting against the wall of the trench. He did not lose consciousness; suddenly he felt severe pain in the upper part of the abdomen, which lasted for a few days. He was laid down at the bottom of the trench where he remained for three hours before being conveyed to the dressing station. He was unable to move his legs; when they were touched a curious painful sensation went right through him from the legs to the back. For two or three weeks after the injury his legs were completely paralysed and sensation was lost as high as the middle of the body. During this time his urine had to be removed by a catheter; strong medicine was required to move his bowels; he had no sensation in the bowel during defaecation. Power and sensation gradually returned to the legs, and thirty days after the injury when I examined him I was unable to detect any paralysis in the movements of his lower limbs. The knee-jerks were much exaggerated and ankle clonus and Babinski's reflex were present on both sides. The presence of the superficial epigastric reflex was doubtful, the abdominal was absent and the cremasteric was normal. There was no anaesthesia. The man still suffered from pains in the abdomen. He was unable to hold his water for more than an hour. There was incontinence of faeces, and sensation in the rectum was impaired. The condition of the bladder and rectum gradually improved, and on April 19th, when he left the hospital, the action of these viscera was almost normal; the knee-jerks were still exaggerated and ankle clonus was present, but the plantar reflex was of flexor type.

In the group of "spastic paralyses," cases are not uncommon in which no paralysis can be detected, the lesions of the upper neurones being represented clinically only by exaggeration of the deep reflexes; such a condition one has often observed in cases of early disseminated sclerosis. The explanation is difficult. It may be that a lesion too slight to produce paralysis, or at least paralysis that can be detected, is sufficient to cut off cerebral impulses which are inhibitory to muscular tonus, when there will be over-action of the spinal centres which is probably the result of the unopposed action of the cerebellum.

REFERENCES.

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ON account of the epidemic of infantile paralysis in the United States, the military authorities of Cuba have ordered that children arriving from American ports who have an abnormal temperature shall be isolated until the cause of the condition can be diagnosed. Children in normal health will be kept under supervision till any danger has passed.

THE TREATMENT OF GUNSHOT FRACTURES.

BY

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THERE are several points in Mr. Hey Groves's article on the treatment of gunshot fractures which appear to be at variance with what I believe to be fundamental physiological principles, and also with my experience in the practical details of treatment with splints. We are all too much concerned to assist the general mass of practitioners engaged in military practice to arrive at a safe, easily intelligible, and practically convenient method of efficient treatment, for me to have any fear that a direct reply to those statements in his article with which I strongly disagree will be regarded in any way as an attack on Mr. Hey Groves; we are all too deeply concerned with the importance of the subject for that to be possible.

The first point at issue is the discussion of the relative importance of the treatment of wound infection and the restitution of normal relations. Though this has been forcibly put by others, it is still necessary to point out that restitution of the normal relations is essential to the efficient working of the natural defensive processes of the blood and tissues. Every surgeon is aware that in such operative procedures as muscle and tendon grafting twisting the muscle is fatal to its survival, at least as far as useful function is concerned; how much more fatal to the survival of the tissues must kinking and damming of the natural flow of blood and lymph be when the maximum value of the circulation is required to combat infection.

It seems obvious that to bring the limb at once into its normal alignment gives the circulation its best chance of a free flow. Further, if fasciae and muscles remain twisted, pockets of discharge form behind the kinks, precisely in parts where the malposition has impeded the circulation in the tissues and rendered them the more vulnerable to toxins. Free drainage of accumulations in the various intermuscular and interfascial tissues in which discharges may collect is obtained by suitable incisions tapping the various strata of natural interspaces; the natural flow will proceed most easily if the tissues are lying in their normal relation without avoidable kinks and twists.

Immediate restitution of normal alignment is one of the strongest agents in assisting Nature to establish a proper system of physiological defence. Of course, cases of gas gangrene and acute infection require, in addition, all the assistance that can be given by free incision, the use of hypertonic solutions, free removal of grossly infected tissues, and any other appropriate device known to surgical art.

The Survival of Bone Stripped of its Periosteum and Apparently Devitalized.

Mr. Hey Groves very properly lays stress on the importance of the medullary circulation, and when he suggests that "if angulation of the fractured bones occurs in such a way as to bring the fragments close to the surface of the wound, this ought to be maintained or even increased," he is clearly contradicting himself, for a bone in an angled position cannot come to that state of physiological rest of the part which is necessary for defence against toxins—not to mention repair. His statement that "it greatly shortens the cleaning of the wound" is open to question and contrary to my experience, and while it may be true that "it facilitates the drilling of any bare bone that may present," this is not in itself an object to be desired. I fully admit that drilling through the hard bone into the medulla is an ingenious and perfectly proper means of providing access for new vessels in the form of granulation tissue; it seems much more physiological to allow the normal surroundings of the bone to provide this as soon as possible instead of having recourse to a surgical artifice. I have frequently had occasion to remark, during the treatment of fractures of the lower limb by means of the Thomas splint, that as soon as the limb is pulled down into correct alignment and brought to a state of physiological rest by means of "fixed extension" the bare ends of the bone which seemed inevitably doomed to suffer necrosis are rapidly vascularized from the periphery by a growth of granulation tissue. This is entirely in accordance with the teachings of Hilton's classical work entitled *Rest and Pain*, a work which is worthy of much more close study by the modern surgeon than it commonly receives. In this war we have to deal with septic conditions in surgery well known to our grandfathers, and while using modern methods of invoking the defensive powers of the tissues, we cannot afford to neglect the lessons they learned in a hard school of experience, unless we are content to let our patients pay the price by buying the experience anew for ourselves.

Much of the most heart-breaking work which those of us who are orthopaedic surgeons have to do is to break up repair tissue formed in wrong positions in order to restore correct position in limbs, when that correct position might easily have been secured in the first instance, when all the parts were free and easy to adjust.

The points I wish to make so far are, first, that while free incision, saline irrigation to promote lymph flow, and mechanical cleansing and excision of the wound all have an important place in the process of defence and repair, the restoration of a free blood supply, and with it free drainage, is best assisted by getting the limb into correct alignment, so that the natural paths of flow of blood and lymph are not twisted or obstructed; and, secondly, that if this is done repair follows naturally and continuously on the initial processes of defence without the necessity of inflicting a new injury on the tissues at a later date in order to restore the shape and normal relations of the limb.

The Best and Most Efficient Type of Splint.

I cannot accept the statement that the muscular pull "which is mainly responsible for the element of displacement of a fracture which is most difficult to reduce" is, to quote again, "constant and elastic in its action, and not merely reflex or voluntary." My experience of the use of the Thomas splint in fractures and in dealing with the spastic contraction of muscles in cases of cerebral palsy of infants, has led me to a firm conviction that the muscular contraction which leads to deformity is essentially reflex. It was not till I grasped this fact that I was able to understand the extraordinary way in which a case of fracture of the femur treated on a Thomas knee splint comes in due course to a state of complete muscular rest, so that the muscles relax, and no force is needed to complete the restoration of the length of the limb.

The wholly inaccurate and misleading impression of the Thomas splint and its use in the treatment of fractures of the lower limb, given in Mr. Hey Groves's article, compels me to attempt to explain how it ought to be used, and to dispel some of the misapprehensions which have evidently arisen. I can do so with some confidence, as I have used the splint constantly since I first was taught how to use it in 1901, and it had then already enjoyed an established reputation for twenty-five years.

The Thomas knee-splint in the treatment of fractures is no new thing—though many surgeons seem to regard it as such. It was written about in 1878 in strong terms of praise by Rushton Parker. The new factor is that many surgeons who have never given much attention to surgery of bones and joints, and have not, so to say, served a regular apprenticeship in this branch of surgery, are now compelled to pay a great deal of attention to it, and have discovered that a section of surgeons accustomed to the treatment of bone injuries are in the habit of using Thomas's splint.

As a surgeon who has used the Thomas splint as a matter of routine, I would lay down the following points as constituting the essential difference between the "fixed extension" employed with the Thomas splint and the "elastic extension" employed in any method of weight and pulley extension. With "fixed extension" the nerve-muscle apparatus concerned in spinal reflexes comes to rest and ceases to act within forty-eight hours of efficient fixed extension, and after that the whole musculature of the limb comes to rest and no further trouble need be feared from "muscular action." On the other hand, with weight and pulley extension the nerve-muscle apparatus is kept on the alert. The muscles remain in the state of elastic tension described by Mr. Hey Groves and do not come to rest. It is true that this state of elastic tension may be overcome by fatiguing the muscle by the use of great weights such as he describes, weights up to 25 lb.

But the use of such weights subjects the tissues to a tension which he properly deprecates—again I quote: "Extension involves tension, and the less tension there is in the tissues the easier the drainage and the better the natural resistance of the soft parts against inflammation." With this statement I am entirely in accord, and I use the Thomas splint because when this splint is properly constructed and properly used there is less tension on the tissues than in any other method of treatment with which I am acquainted.

The first difficulty raised is that it is impossible by a "single act of traction," a "single momentary act," or by a "sudden act" to restore the femur to its full length; the phrases quoted all occur in Mr. Hey Groves's article. In order fully to repel these suggestions, which I consider to be erroneous, I shall attempt to explain the manner in which I am in the habit of dealing with a fracture in the middle or lower third of the femur. I will take as an example a case admitted under my care on May 4th, 1916.

The patient had been hit by high explosive shell on April 29th. He was suffering from numerous scalp wounds, a wound of the chest which gave rise to a pleurisy, diagnosed on May 5th, and numerous small wounds down his right leg, in addition to a fracture of the middle of the right thigh with a large ragged wound on the posterior and outer part of the thigh communicating with the seat of fracture. He was transferred from France on a Mayberry-Wallace splint. He had three inches of shortening, measured from the anterior superior spine to the internal malleolus. The large ring of the Mayberry-Wallace splint, not being correctly shaped, was pressing up into the perineum and not riding on the tuber ischii, as a properly shaped Thomas ring would.

An anaesthetic was administered, the Mayberry-Wallace splint removed, and the wounds covered with temporary dressings. Some difficulty was experienced in getting convenient areas of uninjured skin for application of adhesive strapping for the "extensions," but by cutting the strapping into many tailed strips it was possible to have room to dress the various stray wounds in the leg and yet get efficient hold of the limb. Most of the traction was from the sides of the knee and just above it.

The limb was pulled out by hand to within about ¾ in. of the length of the opposite leg without any exercise of great force—that is, the deformity was at once reduced by about 2¼ in. A gutter metal splint was applied to the back of the leg and thigh below the fracture, and a bandage sling from the side bars applied to support the upper third of the thigh, leaving the region of the wound free for irrigation and drainage; an interrupted back splint to fit the patient was made but not used, as the alignment was good.

The bottom of the splint was supported in a crutch at the bottom of the bed. At the same time a Thomas right-angled shoe was applied to steady the foot, as there were rather extensive wounds of the leg just above the ankle. The nurses, who were not familiar with the splint, were surprised to find that there was no difficulty in moving the patient for any necessary purpose. About a fortnight ago I heard the patient tell a surgeon who was visiting the hospital that, except for the first two or three days, he had felt no discomfort from the ring.

Secondary haemorrhage occurred from the anterior tibial artery. It was associated with a phlebitis of the internal saphenous vein which caused some disturbance in the course of treatment. In spite of complications, the whole treatment of this case was carried through without removing the splint till July 22nd, when it was taken off altogether as the fracture had united, though the surface wound was not quite healed. The shortening is between ½ in. and ¾ in. If it had not been necessary to ease the strapping in places on account of the phlebitis, it would probably have been possible to avert even this small degree of shortening.

This case alone—and it is only one of a series—answers most of the objections raised by Mr. Hey Groves. The suggestion that it "only needs a little slipping of the adhesive plaster . . . a little giving on the part of the soft tissues over the tuber ischii, to allow the powerful thigh muscles still further to drag the bone fragments out of position," contains three fallacies. The first he exposes himself. On the next page he writes: "That extension by adhesive plaster alone is capable of reducing and retaining every kind of fracture has been long ago demonstrated by Bardenheuer and his pupils"; there is therefore no reason to attach importance to a "little slipping of the adhesive plaster"; even if it happened it would be discovered by the surgeon if he uses his tape measure as he ought.

The tuber ischii is the bone on which man sits, and the soft tissues over it are not likely to give. If the ring of the Thomas splint is properly constructed and fits the patient reasonably well, it will not slip off the tuber ischii into the perineum. The thickest part of the padding on the Thomas ring should not be more than 1¼ in. to 1⅜ in. in diameter even in the largest ring. The ring is usually made larger than this in the Mayberry-Wallace splint and in other splints improvised since the war began. No such splint is a Thomas splint, and its faults ought not to be associated with Owen Thomas's name. I think that the reason why Messrs. Mayberry and Wallace put such a powerful winch on their splint is not because it was needed to overcome the muscles, but because the ring of their splint is too thick to lodge securely on the tuber ischii, so that it slips off into the perineum. The more the winch is wound up the more the ring is driven into the perineum; but this is not fixed extension, and the splint is not even a modification of a Thomas splint, for it does not fulfil the first requisite of a Thomas splint—namely, a properly designed ring.

The third fallacy is that the powerful thigh muscles will further drag the bone fragments out of position. This is a myth which ought to have been exploded long ago.

The behaviour of the muscles in the case of a fracture under treatment by fixed extension was long very puzzling to me, for, like many others, I had an idea that the muscles crossing the seat of fracture had a constant tendency to contract. Experience, however, proved that not only these muscles but all the other muscles of the limb come to rest in a relaxed state if the limb is put in fixed extension. A study of the behaviour of the muscles in cases of spastic paraplegia, together with a consideration of the experiments of Magnus on spinal reflexes in the dog and the cat, gave me the clue to the situation.

In spastic paraplegia or spastic central diplegia in children the inhibitory control of the upper neuron is impaired, and reflexes are exaggerated, especially in the strong hypertrophied adductors of the thigh. Any stimulus almost may excite a strong contraction, not only of these, but also of other hypertonic muscles, inducing movements of the hands, twisting of the face, and other phenomena familiar in such cases.

Clinical experience has shown that if the powerful thigh muscles and calf muscles are completely controlled by fixing the limbs in full abduction in a Thomas abduction frame, not only do the controlled muscles cease to fight, but other muscles become less excitable, and the general twitchings tend to disappear; the explanation is that the excitable state of the spinal motor cells maintained by afferent impulses from the hypertonic muscles ceases.

To cut off these afferents Forster divides posterior nerve roots; surgeons of the school of thought to which I adhere prefer to cut them off at their source by controlling the muscles—in many cases dividing some of the stronger adductor muscles to put them temporarily out of action.

These physiological facts lead us to expect similar results in cases where localized groups of muscles are on guard over an injury. There is no loss of the control of inhibition by the upper neuron, and therefore we have normal physiological reflexes from the injured limb to consider, not exaggerated uncontrolled reflexes.

It is a physiological law that the muscles about any injured area remain in a state of tone or guard to prevent accidental movement of the injured part; whether the pleura, an abdominal organ, or a fractured bone is in question makes no difference.

It is a further physiological law that sudden changes of tension in a muscle excite afferent impulses which give rise to reflex contractions, as in the familiar method of testing the knee-jerks. Now, in setting a fracture of the thigh on a Thomas splint the method of procedure I have always understood to be correct is first to extend the limb gently but firmly in the line of its axis by manual extension. In a recent simple fracture the muscle will quietly relax if the surgeon pulls firmly and quietly. If he varies his tension suddenly a reflex contraction at once occurs, and the patient (if not anaesthetized) suffers a spasm of pain. In this way in all recent cases it should be possible to bring the limb to within about half an inch of its full length. No struggle is made to get the other half inch, the extension straps are secured to the bottom end of the splint, and the limb slung comfortably from the side bars along its whole length, great care being taken to preserve in this way the convex bowed contour of the front of the thigh. Sagging at the site of fracture is a very bad fault, and, unfortunately, very common; if the front of the thigh merely looks straight the femur is sagging; the

posterior support, whether a gutter-shaped metal splint, or perforated zinc, or merely webbing slings, must be tightened up if this occurs.

Within twelve to twenty-four hours it will be found that the extension straps are no longer taut—not because they have slipped or stretched to any extent, as is proved by the tape measure, but because the muscles have relaxed. If the surgeon merely tightens the extension straps he finds that he has gained a quarter of an inch or more. In all ordinary cases of simple or even compound fracture, by merely taking up the slack of the extension straps—hand-taut—two or three times a day, it is possible to extend the limb to half an inch beyond the length of its fellow. In civil practice this is what I have always aimed at.

There is no constant extending force put on the muscles, they are merely prevented from contracting. In twenty-four hours at most the nerve muscle apparatus acquiesces in this and no further reflex actions occur; on the contrary, the whole nerve muscle reflex system goes to sleep, the muscles relax and do not remain on guard, as the system of fixed extension has relieved them of all responsibility for the guard against adventitious movement.

The contrary is the case when weight and pulley or elastic extension is used. The nerve muscle system is now kept awake; sudden movements of the patient's body are liable to cause "starting pains" due to sudden reflex contractions. The only means of stopping this is to increase the weight, putting a constant tension on the tissues; but, as Mr. Hey Groves rightly points out, "the less tension there is on the tissues . . . the better the natural resistance of the soft parts against inflammation."

It is on those grounds that I hold that "fixed extension" is physiologically preferable to any method of applying constant extending force, and results show that it is efficient.

When Mr. Hey Groves states, with regard to treatment of cases on the Thomas splint, that he "has never yet seen one in which gross displacement had been corrected by it," he must be speaking from a limited, and possibly unfortunate, experience of the splint. His statement could be contradicted by any surgeon who, at any time during the past thirty years or more, has visited the clinics in Liverpool or elsewhere where the splint is regularly used.

Cases in which malunion has already occurred fall into two classes—civilian and military. In civilian surgery we have been in the habit of interfering with impunity, in cases of compound fracture, very shortly after wounds have closed. In military surgery the danger of recrudescence of virulent infections latent in the wound is so great that an interval of many months must be left after the last sinus has closed. A year ago I regarded three months as a reasonable interval; now I am doubtful if six months is always safe.

It is therefore all the more important, in the case of gunshot fractures, that full restitution of form should be made in the first instance, when the whole area of the fracture is easily manipulated; if malunion is permitted, it may be more than twelve months before it is safe to attempt to correct the mistake.

In civilian practice one has frequently been called on to deal with shortening of 2½ in. to 3 in. two, three, or four months after the injury. In most such cases one can confidently promise to reduce the shortening to ½ in., and often completely. The malunion has to be broken down before the limb can be lengthened. In many instances the fracture can be disunited even several months after the original injury by manipulation only, without having recourse to osteotomy. The guiding symptom as to the possibility of doing this is tenderness at the seat of malunion, for callus which is still tender is rarely very firm.

The difficulty begins after the fracture has been disunited, for the soft parts must be stretched. The method I employ is active extension with block and tackle. This is led through the ring of the Thomas splint, so that when the maximum extension considered advisable at one sitting has been obtained the splint is slipped up the limb and the extension straps secured. It is to be noted that when the block and tackle extension is removed the limb relaxes a little, as it is impossible to tie the straps by hand to the bottom of the splint quite as tight as the limb can be pulled by block and tackle. This is really the salvation of the situation, as it relieves the tissues of severe tension which if continued would be injurious. From this time on the case is treated as an ordinary recent fracture, unless it is considered necessary to give an anaesthetic again after a week to pull the limb still further down.

It is clear that the cases of malunion brought to the orthopaedic surgeon in civil life following simple fracture or an ordinary compound fracture are seldom associated with the massive cicatrization of all the tissues of the thigh found in cases of compound gunshot injury associated with extensive laceration of the tissues and still more extensive fibrosis the result of septic infiltration of the tissues. In civil cases full correction of a shortening of 2½ inches or more is frequently obtained by these means three or four months after the injury. In military cases associated with very extensive infiltration of the tissues it is necessary to wait about twelve months after the injury, and prognosis must necessarily be more guarded.

The relative value of bone grafts and plates is too big a question to discuss here. Personally I have not put metal of any kind into bone for about ten years. My impression is that metal is physiologically a deterrent to rapid and strong osteogenesis and repair of bone. My training has been to treat fractures by manipulation, and recent experience, during which I have seen many cases of non-union after plating, even in cases in which there is no history of sepsis following the operation, inclines me to the view that plating is an operation requiring a high degree of technical care and skill—a degree of skill attained by Lane and some of his school, but not by all his followers.

The question is whether it is more easy to train a surgeon to be an efficient master of manipulative treatment of fractures on splints or to be a master of Lane's technique in treatment by plating. My own view is that it is easier for a man to become competent in the former, and this course has the advantage of being applicable alike to the septic compound fracture and the simple fracture, while plating to be really successful must be performed in the aseptic case only.

THE TREATMENT OF CONVALESCENT SOLDIERS BY PHYSICAL MEANS.*

BY

MAJOR R. TAIT MCKENZIE, R.A.M.C.

A GREAT military hospital may be compared to a general post office in which the sick and wounded from the front are sorted out into first, second, and third class matter.

The first class matter is distributed rapidly to regular military hospitals and those under the Red Cross, where an operation, or a short course of treatment, puts them right, and after ten days' leave they go back to the fighting line, with few exceptions.

The second class matter requires an additional stay at a convalescent hospital, commanded by an officer of the Royal Army Medical Corps, in which they receive treatment by physical means, including exercise in addition to the usual hospital treatment, and a large proportion of these men again find their way to the front.

The third class matter, however—the cases too tedious for the hospital and the convalescent camp—are more difficult to provide for and dispose of. During the first year of the war they were referred from dépôt to dépôt, always finding that they were at the wrong address, and it was not until last autumn that the Director-General was able to give his attention to these cases that had begun to accumulate in considerable numbers. He arranged a series of command dépôts, commanded by a combatant officer for discipline, with medical officers attached, and to them have been sent all for whom there was some hope of cure, or improvement, within a period of six months.

The objects of these dépôts were to return every available man to active service by treatment; to return men fit for light service abroad who could replace fit men in

* Read before the Section of Surgery of the Royal Society of Medicine, July 21st, 1916.

light duties on lines of communication; to fill positions requiring light duty at home by men who were unable to do anything more than to release a better man for active service; and to discharge from the army those for whom no treatment could be expected to give further results.

These command dépôts afforded welcome relief to the various regimental dépôts and other places overcrowded with men useless from the military standpoint, and of but little use to themselves—men who were rapidly lapsing into complete or semi-invalidism, and whose deterioration from a military standpoint was even greater, under the combined influence of sympathy and freedom from all duty.

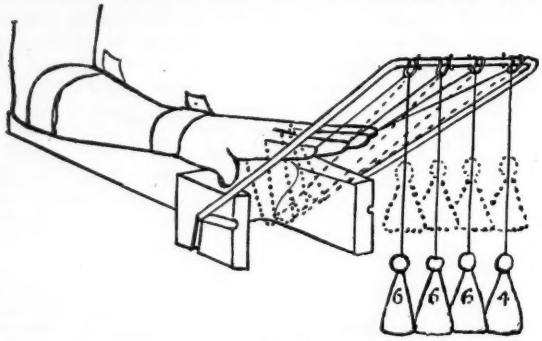

Fig. 1.—Machine for exercising the fingers. First position. Fingers extended. Movement, flexion at the metacarpo-phalangeal joints. Movement represented by dotted lines. (Weights in ounces.)

Either two or four thousand men constitute the complement of patients for a command dépôt—a strange assemblage of cases.

Profound neurasthenia, the result of sleepless nights and arduous days; shock in all its forms—tremulous hands and tongue, stammering speech or deafness, persistent nightmares and fears by day; disorders of sensation, contractures, and paralyses; rapid and weak heart action, hearts that were overstrained and that are unable to sustain the effort of the lightest gymnastic exercise or the shortest march; rheumatism, real and unreal, in all its forms; lungs suffering from the bronchitis of gas poisoning, asthma, and even tuberculosis; profound debilities following typhoid fever, dysentery, and malaria, requiring months of good food, light duty, and progressive exercise to build them up.

An endless stream of the wounded—feet and legs pierced by bullets or pitted by shrapnel; arms and hands with torn nerves and jagged tender scars; chests still containing bullets or pieces of shell—in fact, no part of the body escapes the effects of the ordeal through which they had gone.

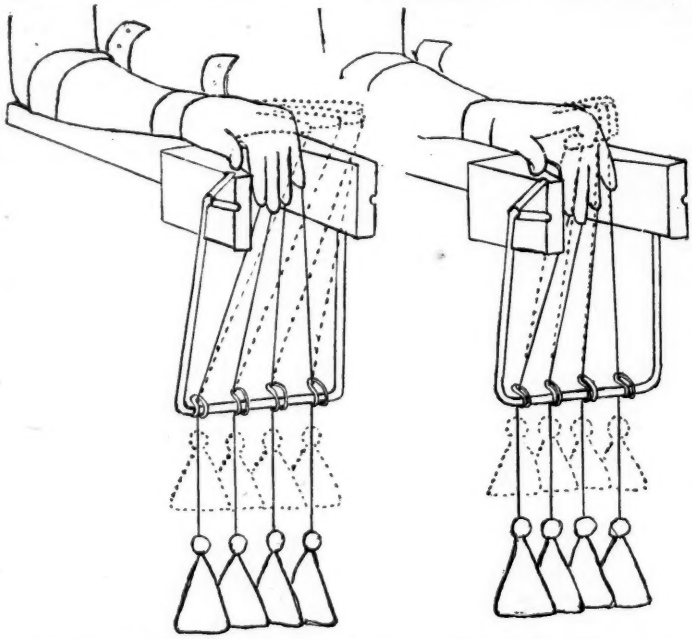

Fig. 3.—Machine for exercising the fingers. Third position: (*a*) Extension of the metacarpo-phalangeal joints; (*b*) flexion of interphalangeal joints with the extension of metacarpo-phalangeal joints.

For almost all these cases the treatment comes under what might be called "physical therapy," electricity, hydrotherapy, massage, mechanotherapy, corrective exercises, physical training, and marching.

The electrical equipment consists of the three currents usually supplied by the polystat.

The faradic, used largely in diagnosis of nerve injury, in the treatment of functional conditions of the heart, and for the stimulation of wasted muscles. By the use of the condenser the current is rhythmically interrupted and varied in intensity, and a good substitute for exercise is obtained where movements cannot be made.

The galvanic current, transmitted through water in the Schnee arm and leg baths, is useful for weakened limbs, for certain cases of frostbite and other conditions of impaired circulation, and for the softening of scar tissue by ionization with sodium chloride and potassium iodide solutions. The ordinary electrodes do not serve for these cases, and we have used copper wire mesh, cut to fit the front of the thigh, the back of the leg, or any other special region; they are covered with felt after the terminals have been soldered on, and are inexpensive.

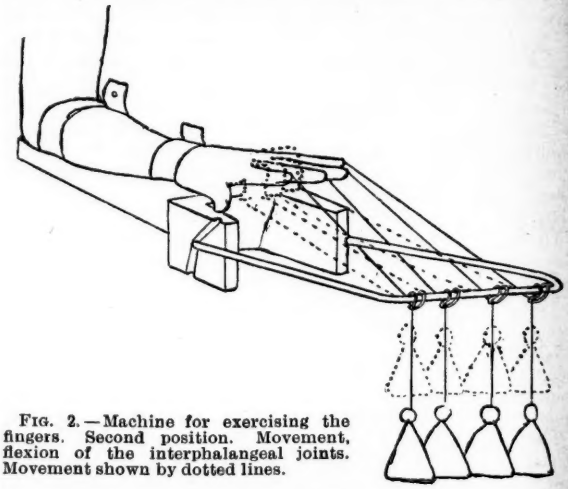

Fig. 2.—Machine for exercising the fingers. Second position. Movement, flexion of the interphalangeal joints. Movement shown by dotted lines.

The sinusoidal current, less irritating than the faradic current, is of value in keeping up the nutrition of muscles whose nerve supply is defective.

The Committee on Balneology of the Royal Society of Medicine gave the War Office the benefit of their experience in planning an ideal equipment for hydrotherapy, by which the ordinary hut is turned into a complete hydro, with the douche, tub bath, a pool and whirlpool baths.[1]

The stimulating douche, hot and cold, has been of use, not only in the treatment, but also in the diagnosis of the many cases of rheumatism, two or three treatments sometimes being sufficient to cause an apparently confirmed cripple to declare himself quite able to undertake full physical training, other cases where the diagnosis was not in doubt, being progressively improved. Many of these cases are treated daily in the tub bath—fifteen to twenty minutes with the temperature at 98°, followed by general massage. A pool is kept at a constant subthermal temperature, about 94°. It is large enough to contain twelve men sitting up to their neck in water, in which they remain for an hour, and there is a constant succession of patients. It is now applied as a routine treatment for practically all cases suffering from shock and disordered heart action. Under its influence a rapid and excited pulse goes down, and an hour's rest continues this sedative effect.

In the whirlpool bath, limbs with painful scars or frostbitten feet are submerged in water up to 110°, violently agitated by a continuous flow from two or three jets, or, still better, by a turbine in the bottom. The introduction of compressed air into the stream turns it into a bubbling

and effervescent envelope for the painful arm or leg. It enables one to apply more heat and stimulation with water at a lower temperature than would be possible if the water were still. After twenty minutes' immersion, the whole part is flushed with blood, the pale limb and purple scar become crimson and comfortable, and the circulation remains heightened for hours. It makes an ideal preparation for the necessary massage and manipulation that would not be tolerated without it.

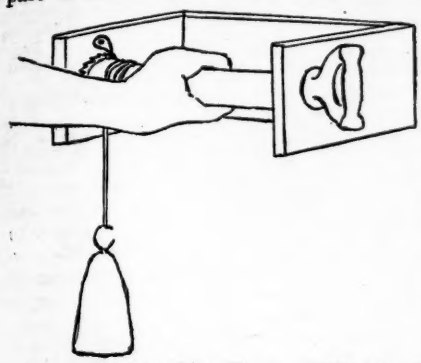

FIG. 4.—Wrist machine, No. 1. Beginning of flexion of the wrist. At the end of flexion the roller is held in position by the ratchet, seen at the left. The handle on the right is for pronation and supination.

In many cases, however, it is not advisable to have a scar sodden by water, so that the heat must be applied in a dry form. For this the radiant light baths are designed, and need not be complicated or expensive. We have found the small hinged shoulder appliance with six lights fulfils all the requirements. It can be adjusted to any single joint at will, and a row of three or four can be placed over the back from the hip to neck, covered by a blanket, and in twenty minutes the whole region so covered will be flushed and reddened, making an excellent preparation for the massage that usually follows. In the great majority of cases at a command dépôt electricity, hydrotherapy, and radiant light are but preparations for massage.

The Almeric Paget Massage Corps has supplied trained masseuses, one operator being able to treat 20 cases a day, and recently the corps has been strengthened by the first graduates from St. Dunstan's—four men blinded in action and taught their profession since the beginning of the war. The histories of cases neglected for months, or maltreated by unskilled amateurs, shows the imperative necessity for careful training in this most important work.

Many cases come in with limbs which have become wasted and joints stiffened by long immobility in splints, cases which must be slowly coaxed back to strength and usefulness by skilled massage and manipulation.

As massage progresses it is followed by passive manipulation, either by the hand of the operator or by machines designed to stretch shortened ligaments, break down slight adhesions, and restore the normal movement in joints.

The Zander machines for passive movement, owing to their cost, are quite beyond the reach of any but the very few. They are unnecessarily complicated, but substitutes giving the same movements have been designed which will produce the same effects at a cost of as many shillings as the Zander machines cost pounds. Circumduction of the shoulder, with increasing range both active and passive, is given by one inexpensive machine made of two uprights of wood, one with crutch-like support for the shoulder, and the other having attached to it an arm with movable weights, the two connected by a rod grasped by the patient, and capable of being moved out or in at the will of the operator. By it we can

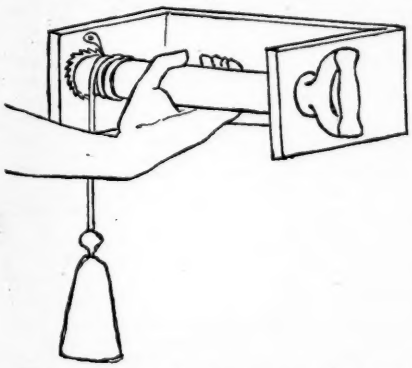

FIG. 5.—Wrist machine, No. 2. An undergrip for extension of the wrist.

progressively increase the range of movement in the shoulder; another acts on the wrist, and still another on the ankle. Treatment must, however, not stop at passive manipulation. The muscles and joints must be systematically re-educated to take up again their normal movements, and again the expensive and cumbrous Zander machine can be replaced by simple devices to strengthen

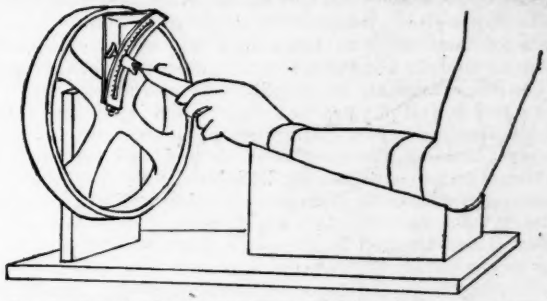

FIG. 6.—Machine for wrist circumduction. The arm is strapped in position, the hand grasping the handle rotates the wheel. The extent of movement is governed by a scale marked in inches.

enfeebled muscles by giving them definite tasks of increasing difficulty.

Specially designed machines are now in use at Heaton Park in which the principle of the weight and pulley is employed. Flexion and extension of the fingers at the metacarpo-phalangeal joints and at the interphalangeal joints can be obtained by one (Figs. 1, 2, and 3) having a wire hoop with rings through which cords are threaded and attached to a cotton glove by one end, the other end terminating in rings to which are hung shot bags weighing 2, 4, 6, and 8 oz., so that the muscles can be given an increasing load as they become stronger. The direction of the pull is changed so as to obtain flexion or extension by adjusting the hoop. Other devices are used for the wrist (Figs. 4, 5, and 6), elbow, shoulder (Fig. 7), trunk, thigh, leg, and ankle (Fig. 8), but to be effective movements on them must be given with great accuracy and in known doses. It is easy to mistake the real action that has been performed on one of these machines, the normal action of a stiffened wrist is simulated by lifting the elbow, and what looks like pronation may be in reality a rotation of the shoulder. Many cases of functional paralysis in men who have been crushed or buried have been treated successfully by these means, one extreme

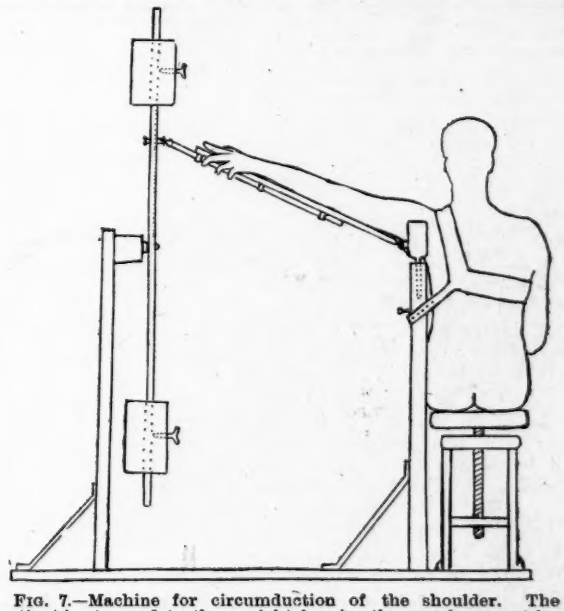

FIG. 7.—Machine for circumduction of the shoulder. The patient is strapped to the upright bearing the crutch support for the shoulder, the arm is extended along the lever and rotates the two weights. This can be either an active or a passive movement.

case of paralysis of the abdominal muscles making a quick and complete recovery.

When a patient is able to perform these movements he must be thrown still more on his own resources by free gymnastics in which there is no guidance from the

machine or operator, and cases are then sent to the gymnastic instructor, who begins with three tables of carefully compiled exercises, starting with half an hour's repetition of such simple movements as raising the heels, turning the head, and bending the arms and trunk, going over the body region by region in a definite progression. Here the wounded man is joined by cases of shock who are able to do only the lightest exercise, by men whose neurasthenia, enteric, or dysentery has left them profoundly debilitated, and slowly they progress through this light physical training from stage to stage until they are able to march in quick time, to bend and twist, and use their arms freely. When they are able to do all these movements they are promoted to full physical training, which introduces quick and active movements, running, jumping, and gymnastic games teaching alertness, control, and agility; walking balanced on raised beams, or lifting their feet high as they go through wire entanglements, climbing walls and leaping ditches. Parallel with this course goes graduated walking on level and then on hilly ground, starting with a mile or two at the patient's own pace, and even with the help of a stick, progressing to three or four miles, and graduating finally into the full route march at quick time.

The patient who can do his full physical training and full route march is ready for the final stage of hardening in which he does the full table of exercises required of

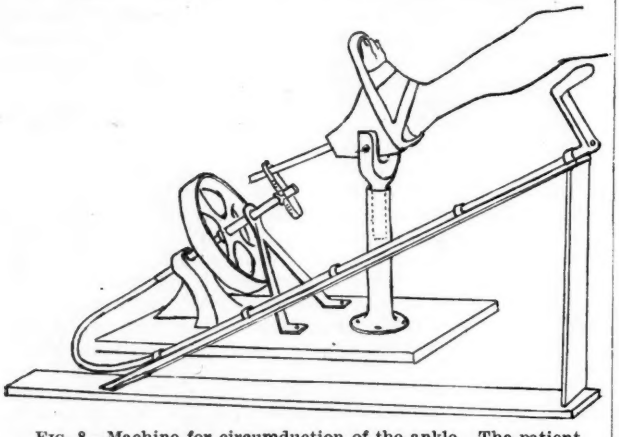

FIG. 8.—Machine for circumduction of the ankle. The patient is seated with the foot strapped to the foot-piece. The movement of flexion and extension is given at the joint between the foot-piece and the wooden upright. A movement of eversion and inversion is given between the wooden upright and the gas pipe into which it is inserted. The foot-piece is attached to a crank coming from a shaft which supports a heavy fly-wheel. This is driven by a flexible driving rod terminating in a handle which is turned by the patient himself, or by the operator. The extent of the movement is determined by the length of the crank that receives the foot-piece.

the trained soldier, and a twelve or fifteen miles march in full kit. This test is necessary, for sometimes it is only when the kit is put on that the healed scar or old fracture becomes painful.

Many cases of disordered heart action can be brought up to the full physical training but not into it. After the first day of it their pulse, which has been brought down to a normal of 80 by faradism or subthermal baths and rest, and which remains undisturbed after a gentle slow walk, jumps up to 120 or 140, and can only be reduced by a reduction of the amount of work required. Several cases were brought up to this point on three or four occasions and had to be returned to lighter duty. Not more than 30 per cent. succeeded in passing into Class A. This experience has also been shared by some cases of shock, and bronchitis following exposure to gas is frequently reawakened by the forced effort of running or jumping, and many cases of frostbite that are quite able to walk a mile or two find themselves unequal to a forced march, and have to be left on light duty.

We shall in future be able to refer suitable cases to the special hospitals now in course of organization for the treatment of different orthopaedic cases, obscure and puzzling nervous conditions, and for the thorough and minute study of the heart, where individual attention can be paid to cases that would otherwise have to be taken in groups.

A glance at the final result obtained in a command dépôt will, I think, show how thoroughly justified the Director-General has been in establishing them in spite of the difficulties met with in manning and equipping these great camps.

At Heaton Park an analysis of all classified cases sent out up to date shows that out of all men discharged,

Nearly 50 per cent. have been rendered fit for active service, and have rejoined their units in the fighting line.
About 15 per cent. have been sent to lines of communication abroad.
About 15 per cent. have been sent to useful work of a sedentary character at home; and
Over 20 per cent. have been discharged as permanently unfit, many of these being untreatable from the first.

The average time of each man spent in treatment was well under three months, and the fact must not be lost sight of that, even though a man is not sent back in category "A," his opportunities for a useful career in civil life after the war have been enormously increased and the burden on the nation in future pensions correspondingly lightened.

Note.—I wish here to acknowledge the assistance of Captain A. E. Barclay, R.A.M.C., whose help in time, ideas, and money made it possible to make the experimental machines for corrective exercises, and to thank Dr. H. J. Seuwen for notes on cases under his immediate charge for electric treatment, and Dr. Frank Ratcliffe for special and valuable assistance in observing cases under treatment by hydrotherapy.

REFERENCE.

[1] BRITISH MEDICAL JOURNAL, 1916, vol. i, p. 319.

TRISMUS DURING SERUM SICKNESS (SEPTIC FINGER).

BY R. F. BOLT, M.R.C.S., L.R.C.P.,
CAPTAIN R.A.M.C.(T.C.).

As the occurrence of trismus fourteen days after the infliction of a wound is calculated to give rise to great anxiety, not to say alarm, I think the following case may be of interest.

An officer of the Royal Army Medical Corps, doing duty at a casualty clearing station, pricked his right index finger on March 1st while operating on a case of empyema the result of a gunshot wound of the chest. On the following day his temperature rose to 102° F., and the finger was incised. On March 3rd a dose of 18 c.cm. of antistreptococcus serum was injected into the right flank. No antitetanic serum was injected. In the evening his temperature rose to 104° F. On the next day the temperature was 102° F., and it fell to normal on the following day.

On March 7th he was transferred to a general hospital, where he came under my care. On admission the wound in the finger was healed. There was a tender enlarged gland in the right axilla. The temperature was normal and remained so for seven days. The gland subsided. He was up and going about and was marked fit for a convalescent home, but on March 14th an urticarial rash appeared on the arms and chest and abdomen. On March 15th the rash was distributed generally over the body; there was severe headache, and the temperature rose to 100° F.

On the morning of March 16th the temperature rose to 102° F., and he had great pain in the neck, back, and limbs. He complained of stiffness in various muscles; there was also some rigidity, especially in the right upper limb. The lower limbs were drawn up and could not be fully extended. The metacarpo-phalangeal joint of the right middle finger was swollen and very tender. He was given a mixture containing sodium salicylate and sodium bicarbonate, 20 grains of each, to be taken every four hours. There was profuse sweating, the eyes were congested, and the same evening trismus developed; the teeth could only be separated by a quarter of an inch. There was no sore throat and no local inflammatory condition of the jaw or mouth.

The case was seen in consultation by Colonel A. Fullerton, A.M.S., and Major A. E. Webb-Johnson, R.A.M.C. The possibility of the symptoms being due to tetanus was seriously considered, but it was decided that, as the patient was already suffering from serum sickness, it was not advisable to give antitetanic serum, but that other methods of treatment should be tried. Accordingly the patient's room was darkened, and he was kept very quiet. He was given 20 grains of chloral hydrate at 7 p.m., and again at 11 p.m. The pain continued, and he was given ¼ grain of morphine at midnight. The sodium salicylate and bicarbonate mixture was continued.

On the morning of March 17th he was a little better; the temperature was 102° F., the trismus was less marked, and the pain was subsiding. Chloral hydrate (20 grains) was repeated every four hours alternately with the sodium salicylate mixture during the day. There was still considerable anxiety as to

whether the symptoms were due to tetanus or whether they could not be entirely accounted for by serum sickness.

On March 18th the trismus had almost disappeared and the muscular pains were less severe. He had one dose of chloral hydrate (20 grains) during the day. On March 19th he could open his mouth to the full extent. The temperature was normal and the pain disappeared. Further progress was rapid and satisfactory. He was allowed up on March 23rd, and went to a convalescent home on March 25th.

If the symptoms were due to tetanus the infection might have taken place at one of the following times:

1. When he pricked his finger. Inquiry showed that the patient on whom the operation for empyema was performed made an uneventful recovery. But as he had received an injection of antitetanus toxin it is possible that tetanus bacilli were present in the wound.

2. When the finger was incised. This is almost unthinkable at a place where there is constant operating and a regular surgical technique.

3. From the needle, when the antistreptococcus serum was injected. This is also unthinkable.

4. The serum might have contained some tetanus toxin. This is possible, but unlikely, otherwise one would expect to have heard of other cases of a similar character.

The course of the symptoms and the rapid recovery point to the condition having been due entirely to the antistreptococcus serum.

I am indebted to Lieutenant-Colonel T. H. Goodwin, C.M.G., D.S.O., R.A.M.C., for permission to publish this case.

BABINSKI'S SIGN FROM THE POINT OF VIEW OF COMPARATIVE ANATOMY.

Abridged from a Paper by

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CONSULTING PHYSICIAN TO THE NERVOUS DEPARTMENT OF THE NICHOLAS MILITARY HOSPITAL, PETROGRAD.

In a series of papers published in the Russian *Journal of Psychiatry*, Petrograd, I have brought forward arguments showing that in the explanation of symptoms observed in lesions of the pyramidal tracts it is necessary to call attention to some facts of comparative anatomy.

About twenty years ago Babinski enriched the symptomatology of nervous diseases with a very important sign, the causation of which remains hitherto unexplained.

To say that the extensor plantar reflex is a spinal reflex, while the normal plantar reflex is a cortical one, is no solution of the problem. Such a statement contains no clearing up of the nature of the phenomenon and is but a paraphrase of the question. In fact, the sign of Babinski is somewhat enigmatic; it is neither an exaggeration nor an abolition of a function, but an inversion of it. We must search for some special mechanisms which, being latent in the normal subject, are set in action by a lesion of the pyramidal tract—that is, when the communication between the spinal cord and cerebrum is interrupted.

What is the nature of these mechanisms? A reply to this question is hinted at by the fact that the extensor reaction of the great toe is a quite normal phenomenon in infants who have not learnt to walk. Thus the sign of Babinski appears to be a normal phenomenon during a period of the ontogenetic evolution of man. Hence it can represent a rudimentary function, which is common to an earlier period of phylogenetic evolution, and being manifest in man during a certain period of his ontogeny, becomes latent in the adult individual, to reappear again in the case of lesions of the pyramidal tracts.

To prove the supposed rudimentary nature of Babinski's sign we must consider whether there are facts supporting the assumption that a lesion of the pyramidal tracts is a condition generally suitable for the appearance of any rudimentary signs.

In its long way of evolution from a lower metameric animal to the highest mammals the nervous system has undergone great and complex changes of structure and function. There is, however, a part of the nervous system which, in spite of these great evolutional variations, has retained its essential anatomic and functional features. This part is the "propriospinal" apparatus (*Eigenapparat des Rückenmarks* of Edinger). Even in the high stages of evolution it remains metameric in structure and reflex in function.

According to Edinger, there are to be distinguished in the central nervous system two parts essentially different from the point of view of their phylogeny—the neencephalon and the palaeencephalon. The increasing functional and structural complexity of the nervous system consists in the overgrowing of the neencephalic—that is, pallial—elements and in the adaptation of the palaeencephalic elements to new functional purposes. In man the neencephalon is represented by cortex and its projection fibres. In the spinal cord of man the part corresponding to the palaeencephalon is the grey matter with its metameric reflex "centres," whereas the white matter of the cord belongs to the neencephalon, and consists of fibres of the neencephalic elements penetrating into the spinal palaeencephalon to communicate with the neencephalon (cerebral cortex). The metameric spinal segments, thus connected by the pyramidal tracts with the cortex, gradually lose their pure reflex function to stand under the control of the neencephalic impulses—that is, to serve the purposes of voluntary innervation. In addition, the metameric nerves become combined in groups to form plexuses. The first rudiments of plexus formation are observed in the Selachia in the form of the "nervus collector," by which the metameric nerves are connected; in the Selachia, also, we meet the first traces of the neencephalic elements of the cortex.

Thus the propriospinal apparatus, without losing its essential character (reflex action), transmits the cortical impulses to the groups of nerves (plexus) by means of which these impulses spread further to muscles. By this combination of metameric nerves into groups a possibility is created for "neencephalic" innervation of *groups* of muscles (voluntary movements of extremities). Thus, instead of metameric reflex innervation, arises voluntary innervation by segmental groups of nerves. To get this result the neencephalon suppresses the reflex action of the propriospinal apparatus (cortical inhibition), this latter becoming appropriated to the transmission of the impulses, not from one segment to another, as in lower metameric animals, but to the whole groups of segments according to the groups of the muscles of the extremities. This influence of the neencephalon on the propriospinal apparatus is realized in the main by means of the pyramidal tracts.

In a lesion of the pyramidal fibres—that is, in a case of separation of the propriospinal apparatus from the neencephalic elements of the cortex:

1. The voluntary impulses cannot reach the periphery, whence arises paralysis or paresis.

2. The inhibitory influence of the cortex on the propriospinal apparatus ceases—thence appear: (*a*) the increase of reflexes, the clonus; (*b*) the propagation of the reflex irritation from segment to segment in form of "réflexe de défense" and analogous symptoms (the pandiculation of Bertolotti, femoral reflex of Remak, etc.).

3. Lastly, there arise some reflex reactions corresponding to some earlier stage of phylogenetic evolution. These reactions are nothing but effects of mechanisms latent in normal cases and manifesting themselves in the case of loss of the cortical influence on the spinal cord.

And so Babinski's sign comes into existence; the normal flexion of the great toe is neither exaggerated nor diminished after a lesion of the pyramidal tract, but is inverted into an opposite reaction of the extensor type.

We will now try to explain the origin of Babinski's sign from the point of view of the evolution of the function of the great toe. The normal plantar reflex, that is, the synergic flexor reaction of all five toes, is a function peculiar to man. The lower extremity of man, with its purely static function, is evolved from an extremity with the function of grasping. In the act of grasping, the great toe makes no flexion, but a movement of opposition. The transition from the grasping function to the purely static function has been realized by the loss of the function of opposition. In man, unlike almost all other primates, the opponens hallucis muscle is absent, and the first os metatarsale is situated parallel to the other metatarsals, while in the other primates the first metatarsal makes an angle with the others. When, in the process of evolution, the grasping function is lost, there remains in the second, third, fourth, and fifth toes an aptitude for flexion, while the great toe loses its function of opposition absolutely. But for the act of walking a function of the synergic flexion of all five toes together is necessary. This act, as

already mentioned, is absent in a newborn child, and develops but gradually in learning to walk. In man the function of synergic flexion of all five toes is not an inherited capacity, but a special adaptation of the neencephalic elements and a result of the cortical influence. In man the centripetal impulses from the irritation of the foot sole reach the spinal segments corresponding to the flexor centres of all five toes. In other words, the normal plantar reflex in man is a function of the cortex, and, when the spine is separated from the cortex, this reflex—the synergic flexion of all five toes—disappears. In such cases, instead of spreading to the flexor centres of all five toes, the impulses from the sole spread only to segments to which they used to spread when there existed no special cortical mechanisms for synergic flexion of all five toes which do exist in man. The nearest function of the toes preceding their synergic flexion in man is the grasping function observed in other primates. So in pyramidal lesions, the impulses provoked by irritation of the sole must spread to the centres to which these impulses used to spread when the function of the foot was a grasping one. Thus they spread to the flexors of the second, third, fourth, and fifth toes. As for the great toe, its opponens muscle, to which in this stage of phylogeny have spread the impulses from the sole, is lost in man, therefore there would be no reaction of the great toe. This isolated flexor reaction of second, third, fourth, and fifth toes, the great toe remaining without reaction, is to be observed in some cases of pyramidal lesion, and is considered as a certain sign of pathological reaction, as a not well pronounced sign of Babinski, or an "allusion" to it.

The above arguments explain why, in the pyramidal lesions, the great toe does not participate in flexion of the toes as it does in a normal individual.

Now we come to the most important part of our discussion—namely, to the question of the extension of the great toe. This reaction realizes itself by means of the long extensor muscles, because the extensor brevis, being no separate muscle but a part of the extensor digitorum communis brevis, cannot act independently of the extensors of the other toes. We therefore must admit that in Babinski's reflex the impulse from the foot sole, instead of running to the spinal centre of the flexor hallucis, as it does in normal cases, goes to the centre of the extensor hallucis longus.

As the man's foot is evolved from a grasping organ, it is possible that in a certain stage of evolution of the grasping function into the pure static one there was a period when the flexor act was limited to the second, third, fourth, and fifth toes, the great toe having been during this act not only not flexed, but rather extended. Or, otherwise, we could admit that in the way of evolution the great toe has lost its grasping function most early, there having been a period when it used to be excluded by extension from the grasping act—that is, the flexion, of the other toes.

These suppositions are not mere hypotheses, but based on facts. The Western monkeys—Hapalidae—have claws on all digits except the great toe, which has a nail. Moreover, unlike the other monkeys and apes, the great toe of Hapalida is not opponible. These conditions are very important for the question we are discussing. They demonstrate that in the evolution of the static foot function the great toe has lost its grasping capacity earlier than the other toes. Moreover, the grasping act, like that of scraping, being limited to the second, third, fourth, and fifth toes, the great toe, not participating in these acts, must be removed from other toes, what can be done only by its extension. In Babinski's sign we probably have a rudiment of this condition.

In conclusion must be mentioned a modification of Babinski's sign, the *signe d'éventail*, which consists in the spreading out of the toes. It is very interesting that the function of the spreading out of the toes, which is absent or very limited in a normal individual, is sometimes well pronounced in cases of pyramidal lesions. Like the extensor reflex of the great toe, this phenomenon of the spreading out of the toes is observed in young children. According to the above stated arguments, it is not difficult to explain the nature of the *signe d'éventail*. It is a rudiment of mobility of the toes which existed in the grasping stage of evolution of the foot. As well as the extensor reflex of the great toe, the spreading out of the toes is present in a certain period of ontogeny, and becomes latent when the walking function is developed, but reappears when, in consequence of a pyramidal lesion, the conditions arise for the manifestation of the phylogenetically older and more automatized mechanisms of the spinal cord. Perhaps the *signe d'éventail* is a rudiment of "showing the claws" act.

As to other phenomena analogous to the Babinski sign—those of Oppenheim, Gordon, etc.—their explanation is not difficult after what is argued with regard to the Babinski sign. Both Oppenheim's and Gordon's signs represent paradoxical extension reactions of the great toe in pyramidal lesions instead of the flexion observed in normal individuals. The synergic flexion of all five toes, seen in normal subjects at the manipulations of Oppenheim and Gordon, is, like the normal plantar reflex, a cortical function. In lesions of the pyramidal tracts this function disappears, and the spinal apparatus becoming automatic, there appear rudimentary functions explained by the facts discussed above.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

A PORTABLE APPARATUS FOR THE CHLORINATION OF WATER.

IN the *Journal of the Royal Army Medical Corps* for October, 1913, Colonel F. H. Trehearne and Captain J. J. Harper Nelson describe a method of generating chlorine and using it for sterilizing water. After a series of experiments at the Bangalore Brigade Laboratory a small apparatus was designed to facilitate the production of chlorinated water in the field. It consists of a tin case which could be carried from the shoulder by a strap, divided into two compartments to hold two bottles, a generator and a receiver. The apparatus was said to weigh not more than 12 lb., and was fitted to carry enough chlorate and acid to sterilize 1,960 gallons of water without replenishing. A subsequent design had a sterilizing capacity of 9,600 gallons. This appeared a practical apparatus, and was very favourably reported upon by Major H. C. R. Hime during the battery practice camp of December, 1913, at Rajankunti. I took over charge of one of these apparatus during the medical interdivisional manœuvres at Poona later in the same year. I carried the apparatus about with me, and each evening prepared 20 oz. of chlorine solution, adding the required quantities to the ambulance packals. Although weighing only 12 lb., I learnt from personal experience that the box is sufficiently bulky to be cumbersome, and felt that something much simpler, stronger, and especially quicker in use was wanted. The making of a reliable chlorine solution when temporarily encamped on rough ground, by lamplight, with an apparatus consisting of glass bottles, glass and rubber tubing, and slippery stoppers, presents practical difficulties. In stationary camps or at head quarters the difficulties are less, but one of the great advantages of the chlorine method is, or should be, its practicability with small bodies of men detached from a permanent base or with large bodies on the move. It may occur in practice that the acid fails to produce the total quantity of gas unless the generating flask is warmed, and the chemical action is also hindered in some way by an increase of pressure in the generator.

I venture to put forward the following suggestion for an apparatus. Briefly the method depends upon the use of steel bulbs containing chlorine, under pressure, in sufficient quantities to make a stock solution of definite strength, when allowed to escape into a known volume of water. These bulks I propose using with an apparatus similar to the ordinary commercial siphon soda flask, and I hope shortly to have a practical chlorine flask constructed of 20 oz. capacity, graduated, to facilitate the use of the stock solution when made. The solution will be of a strength of 1 in 550, for which purpose 15.9 grains of gas will be required for each 20 oz. of water. Steel bulbs each containing 15.9 grains of chlorine under pressure, together with a siphon flask of 20 oz. capacity into which these bulbs can be discharged, are the essentials of the apparatus. I am also arranging to have a 10 oz. chlorine siphon flask constructed of a similar pattern. The ordinary 20 oz. flask weighs 4 lb., and equipped with 6 dozen bulbs will weigh 4 lb. more. Six dozen bulbs are sufficient to sterilize 14,400 gallons of water, which to take as an example is enough, at the rate of a gallon a day per man, for a double

company of 200 men for seventy-two days, or roughly two months, leaving a margin of twelve days' supply for wastage. In permanent camps or at a base, where it is possible to centralize the purification of water, a large type of apparatus may be used, and I understand such an apparatus involving the use of large cylinders of chlorine has been described.

The 20 oz. flask will suit the army pattern cart water tank, mark II*, which is the largest in use, with a capacity of 217 gallons. Twenty ounces of chlorine solution emptied into a full cart will produce a dilution of one part of chlorine in 651,000 parts of water, which is sufficient to render water sterile after thirty minutes provided the water is not heavily loaded with organic matter. The shape of the bulbs suggest the use of a bandolier, to be carried by the water orderly of a sanitary section. The flask, fitted in a leather case with shoulder straps, could be carried like a water bottle, and with scarcely more inconvenience.

One of the chief advantages of the apparatus will be the rapidity and ease with which a fresh solution of chlorine can be prepared. With the chemical generator now in use it takes twenty minutes to have a flask of solution ready, and another thirty minutes must be allowed for the action of the chlorine in the water. For parties of men who fill their own packals or water vessels a wait of nearly one hour after a camp is fixed upon is an inducement to neglect precautions. I am convinced that once the siphon chlorine flask is introduced the speed and handiness of the means employed will ensure its success. I would refer those who are interested to an article by Captain J. J. Harper Nelson in the British Medical Journal of May 8th, 1915. A full account of a series of experiments testing the efficiency of the chlorine method is given by him, including a description of the apparatus now employed for obtaining the chlorine solution of the required strength.

H. R. Rishworth, I.S.M.D.,
Assistant Surgeon.

TWO CASES OF TUBERCULOUS MENINGITIS OCCURRING SIMULTANEOUSLY IN A FAMILY.

The coincidence of two cases of tuberculous meningitis occurring in the same family is so unusual that the following details may be interesting:

A girl, aged 14 years, had been seriously ill for about ten days with typical meningeal symptoms which were attributed to tuberculous meningitis, when her sister, aged 16 years, commenced with a similar illness. There is a tuberculous family history—a maternal aunt at present suffering from pulmonary tuberculosis—but neither of the patients had presented symptoms. As the simultaneous occurrence of two cases of meningitis in one family aroused suspicion as to their exact nature lumbar punctures were performed for the purpose of differential diagnosis.

In the case of the elder patient, who was violently irritable, an anaesthetic had to be employed. The cerebro-spinal fluid was under very high tension and was perfectly clear. Tubercle bacilli were found in the centrifugalized deposit from this specimen.

Unfortunately the fluid from the younger girl contained a large admixture of blood, which obscured its naked-eye characters and made the bacteriological examination more difficult. Tubercle bacilli, however, were demonstrated by the use of the Ellerman-Erlandsen method. Both specimens were examined by microscopical and cultural tests for the presence of Gram-negative diplococci, with negative results.

That both these cases should be proved bacteriologically to be due to the tubercle bacillus is in itself of considerable interest, but at the present time, when it is desirable to collect accurate records of cases of epidemic cerebro-spinal fever, that interest is augmented. Both patients have since died, and without the investigation recorded much doubt would have existed as to the accuracy of the diagnosis.

It may not be out of place to mention that, in every case reported to the medical officer of health of Derby as cerebro-spinal meningitis, lumbar puncture is performed for diagnosis before removal to the Borough Isolation Hospital, and practitioners are encouraged to report all cases of meningitis met with, so that this procedure may be adopted. The practice has also been carried out *post mortem* in cases of sudden death in cases presenting symptoms suggestive of cerebro-spinal fever; two out of four such cases have thus been proved to be due to the *Diplococcus intracellularis meningitidis*.

I am indebted to Dr. Patey, of Derby, for his courtesy in informing me of the above-mentioned cases, and for allowing me to carry out and publish details of this investigation. The bacteriological examinations were conducted by Mr. Peckham at the Public Health Laboratory of the Derbyshire County Council; to him I am grateful especially for the happy result of his investigations of the second specimen.

E. H. Walker, M.B., Ch.B.,
Assistant Medical Officer, Public Health Department, and Resident Medical Officer, Borough Isolation Hospital, Derby.

Reports
ON
MEDICAL AND SURGICAL PRACTICE IN HOSPITALS AND ASYLUMS.

CITY HOSPITAL NORTH, LIVERPOOL.

A CASE OF TETANY.

(By T. H. Donovan, M.D., D.P.H., Resident Medical Officer.)

The following notes on a case of well-marked tetany may be of interest.

W. K. K., aged 1 year, was admitted on May 6th, being notified as suffering from diphtheria and measles. A culture from the throat was negative as regards diphtheria, but showed *B. septus* in pure culture. There were well marked purpuric spots on the trunk and extremities. The child was much wasted, and was suffering from gastro-enteritis. Inquiry showed that its dieting had been quite unsuitable, and included fat bacon and cheese! On May 15th carpo-pedal spasms were observed; the hands were next affected, the "obstetric hand" being well marked. The muscles of the face were next involved, producing trismus. Dyspnoea due to spasm of the thoracic muscles was present for some days.

Treatment consisted in lavage, intestinal antiseptics, and a mixture of potassium bromide and chloral, and, of course, suitable dieting. Improvement was immediate, and the child was discharged on June 1st quite recovered from tetany, and its nutrition much improved.

The relation between tetany and infectious disease mentioned in textbooks has not been observed here. Dr. Richardson, with an exceptional experience here and in other city hospitals admitting all classes of infectious disease, has not seen any case amongst the great number of cases coming under his notice. I have to thank him for permission to publish these notes, and also the nursing staff for the efficient manner in which they carried out the treatment.

Reviews.

A RED CROSS UNIT IN SERBIA.

During the winter of 1914–15 when, in the presence of the gigantic drama then unfolding, so many people found the daily round of duty unsatisfying and longed to get something to do abroad, Mr. and Mrs. Berry obtained leave to organize a hospital unit to reinforce other foreign units already in Serbia or about to go there. The unit was recruited almost entirely from the Royal Free Hospital, London, and its adventures are related in a volume entitled *The Story of a Red Cross Unit in Serbia*.[1]

On arrival it was sent to the chief watering place of the country, Vrnjatchka Banja, and given a disused hydropathic establishment and a school; 100 beds were at once established, but eventually the unit controlled six hospitals with 360 beds, and there was also a British Red Cross Unit in the town. The worst misfortunes of Serbia had not then begun, the chief, and very serious, danger was typhus fever. Consequently the first task was to improvise disinfectors and destructors and to attend to the sanitary policing of the surroundings; fortunately Austrian prisoners were numerous and proved willing helpers. In his plans for the prevention of the dissemination of typhus fever Mr. Berry went whole-heartedly on the assumption that typhus fever is carried by lice and by lice only, and the fact that the measures he took, though improvised and in some respects of a summary kind, were completely successful is important evidence of the truth of that theory. One of the hot springs was used for cleansing all patients admitted,

[1] *The Story of a Red Cross Unit in Serbia.* By J. Berry, B.S., F.R.C.S., F. May Dickinson Berry, M.D., B.S., W. Lyon Blease, LL.M., and other members of the Unit. London: J. and A. Churchill. 1916. (Demy 8vo, pp. 307; illustrated. 6s. net.)

and a State coffee-house near by was used as a receiving hospital, where patients were kept for a few days after the bath. On leaving the bath the patient was given clean hospital clothes, his own having been taken away for disinfection—by boiling whenever this could be carried out without utterly destroying them, the remainder by sulphur fumigation. A wooden barrack was built for patients who developed typhus either in the receiving hospital or in the general hospital.

When Serbia was overrun the members of the unit had the good fortune to fall into the hands of the Austro-Hungarians, their actual guardians were Hungarians, by whom they were well treated, and eventually sent home by way of Switzerland. The book is a joint effort, to which several members of the unit have contributed one or more chapters, and is therefore unequal, but it is interesting throughout, and the chapters by Mr. Berry and by Dr. Helen Boyle very well written. Many tributes are paid to the courtesy of the Austrian captors, and as an illustration of this, as well as for the light it throws on a principle of Red Cross law which has been grossly violated by the Germans, we may quote the following passage (by Mr. Berry):

> In fact our treatment by the Hungarians throughout our captivity bore out a little remark made to us once when we were discussing with a Hungarian officer our position as a Red Cross unit in enemy hands. He admitted that we were technically neither "prisoners of war" nor "interned." In reply to the conundrum, "Then what are we?" he answered, "Let us say guests." And as the Austro-Hungarian authorities supplied us with rations, left us our stores, and asked very little of us in return, "guests" was perhaps a description not so very far wide of the mark.

BONE GRAFTING.

A SHORT account of a most interesting demonstration on bone grafting, given by Dr. ALBEE at the Royal Society of Medicine, was published on July 22nd (p. 120), and we now have the opportunity of noticing the publication of his book on *Bone-Graft Surgery*.[2] The fundamental principles are first discussed, and evidence is given that the cells of transplanted bone, under favourable circumstances, retain their vitality and proliferate. The most important factors in the life of a graft are, first, that it should be freshly taken from the body of the individual into whom it is going to be grafted (that is, autogenous), and secondly, that it shall contain all the bony elements (periosteum, bone, endosteum, marrow). The method of operating and special instruments are fully and clearly described. Dr. Albee began to perform his operations for Pott's disease of the spine in 1911. At an earlier date grafts, when used, were cut from the tibia with chisel and mallet—a somewhat lengthy process—which involved considerable trauma to surrounding parts, and the risk of fracture either to the tibial shaft or graft. Dr. Albee's present method is to remove a graft by means of the electrically-driven twin concentric saws recently described and figured in these columns. The motor is held in the operator's hand, in a sterilized casing. The motor can be fitted to saws, drills, or lathe (for the turning of bone pegs), by an automatic catch, and can be quickly interchanged. The operations can be speedily performed, and Dr. Albee states that he can insert a tibial bone-graft in a case of Pott's disease in nine minutes. The book contains descriptions of bone-grafting operations, and the results obtained. The field of bone-grafting, in Dr. Albee's hands, is indeed large. He uses it (1) in the treatment of fresh fractures, to supersede the metal plate; (2) in cases of ununited fracture; (3) to replace bone destroyed by disease, or congenitally absent; (4) to correct congenital dislocation of the hip, by forming a sound lip for the acetabulum, and even to replace the head of the femur by the introduction of a piece of the astragalus; (5) to correct untreated cases of congenital or paralytic talipes equino-varus, by the insertion of a wedge-shaped graft, either by splitting the scaphoid, or inserting the wedge between the head of the astragalus and scaphoid; (6) to close bony foramina after resection of nerve in cases of neuralgia. Many other applications could be quoted.

Throughout the book is beautifully illustrated by drawings, *x*-ray plates, and photographs.

[2] *Bone Graft Surgery*. By F. H. Albee, A.B., M.D., F.A.C.S. Philadelphia and London: W. B. Saunders Company. 1915. (Roy. 8vo, pp. 417; 332 figures. 25s. net.)

OPHTHALMOLOGY.

MR. CLAUD WORTH has issued a fourth edition of his monograph on *Squint*.[3] In introducing it he states that the lengthy consideration given to the preparation of the first edition has rendered unnecessary any great alteration in later issues; the experience of the dozen years following the first publication has confirmed his judgement on most material points. He is, however, now much more hopeful of successful treatment of the group of cases of temporary squint to which he gave the name "neuropathetic divergence." Now nearly all these are susceptible to treatment. He recommends advancement of both internal recti, and never the reverse operation—tenotomy of the external tendons. The recommendation for operation in these cases will need to be justified by very carefully compiled statistics. These cases of temporary divergence cause little trouble to those who are subject to them, and, particularly by reason of the fact that they are temporary, are not a constant source of remark by the onlooker, so that the recommendation of operation must be justified by substantial evidence of success. In the operative treatment of the usual forms of convergent squint the author's experience is that tenotomy is not a justifiable procedure; as a single operation it was uncertain and possibly dangerous. He has also discarded the "combined operation" of advancement of one tendon with tenotomy of the opponent. But he does not appear to have attempted any regular lengthening of the opponent on lines that have been reported as very successful at the hands of other surgeons. In the preface to the new edition Mr. Worth gives an account of the steps by which he has been led to modify his operative procedure and the method he has adopted to keep trace of his cases through many years. There is a suggestion of the formation of a body of statistics giving the results of these cases, but it has not yet appeared in print.

Hints on Refraction[4] has been written by S. K. GANGULY, of the Calcutta Medical College, to teach Indian students practically the subject of refraction. It is well printed upon unglazed paper of good quality, and is sold for twelve annas. If compared with another small book which covers exactly the same ground—Maddox's *Golden Rules for Refraction*—this book does not come out very well. All modern refraction is based upon accurate retinoscopy; sunrise diagrams, clock faces, stenopaic slits, and pin holes belong to a past age. The correct method is to begin with retinoscopy without a mydriatic, then to put up the lenses—a question of a few minutes—and, finally, to use a mydriatic if necessary; but many surgeons rarely use a cycloplegic. To begin with the trial lenses is a waste of valuable time, is tiring to the patient, and often leads to a wrong conclusion. Students should be instructed from the first in retinoscopy without a mydriatic—a procedure often as easy as with a dilated pupil, and sometimes even more accurate. Although minute directions are given for analysing spectacles, the student is not taught how to ascertain the angle of the cylinder, or to detect incorrect centring. It is stated that "about a week after cataract operation it is usual to record the vision of the operated eye without and with +10 D. sph." Surely it is far better to record the vision with the true correction, which is generally +10 D. = +2 to 4 D. cyl. axis horizontal.

Dr. W. W. HARDWICKE'S *Sight Testing Made Easy*[5] is a somewhat more ambitious book. Refraction, however, is not easy and cannot be made so. There is no royal road, but only the arduous path which all skilled refractionists must tread for several months, or even years, in the out-patient department of an ophthalmic clinic. As has been said, retinoscopy is the only sure basis of accurate and rapid refraction work, but it occupies a very minor place in Dr. Hardwicke's book, and is only recommended for certain cases. On p. 34 we read: "If neglected the squinting eye, being but little used, will become amblyopic in time, the first stage of amaurosis." As a matter of

[3] *Squint: Its Causes, Pathology, and Treatment*. By C. Worth, F.R.C.S. Fourth edition. London: John Bale, Sons, and Danielsson, Ltd. 1915. (Demy 8vo, pp. 259; 43 figures. 6s. net.)

[4] *Hints on Refraction, Subjective and Objective*. By S. K. Ganguly, M.B. Calcutta: The Hare Pharmacy. 1916. (Fcap. 8vo, pp. 36; 2 figures. 12 annas.)

[5] *Sight-Testing Made Easy*. By W. W. Hardwicke, M.D.St. And., M.R.C.P., L.R.C.S.Edin. Third edition. London: J. and A. Churchill. 1916. (Cr. 8vo, pp. 88; 12 figures. 2s. 6d. net.)

fact, these amblyopic eyes practically never become amaurotic—that is, completely blind. We cannot agree that squint is less likely to occur in high degrees of hyperopia than in the more moderate degrees, as is stated on p. 35. Section 94 says that glasses should rarely be ordered for children under 3 years of age owing to the difficulty and danger attending their use. The modern teaching, which is confirmed by the good results obtained in practice, is that a child, even a baby in arms, should be fitted with spectacles as soon as a squint is noted. A young child with high hypermetropia will often cry for his spectacles; in fact, children are often far more intelligent in this respect than their parents. On p. 39 it is stated that "when divergent squint is developed, the only successful treatment is operation," but some have gone so far as to assert that the results of fusion training are even more successful in divergent than in convergent squint, and it is certain that the majority of cases can be greatly helped by accurate correction of the refractive error and by fusion exercises. The directions for testing for heterophoria are incorrect. If the Maddox rod be placed before each eye in succession, and one test gives a deviation of 8 degrees, the other of 4 degrees, the total error is not 12 degrees, as stated, but only 6 degrees. As a matter of fact the result should be the same in each case, and generally is. It is usual to place the rods before one eye and a coloured glass before the other; the deviation is read on a tangent scale, and brought to zero by a suitable prism. It is more usual to order one-third of the total error in the correcting prism, and not one-half, as stated. The use of prism exercises to train the defective muscle balance does not seem to be mentioned, but cases of muscular imbalance are better referred to a skilled ophthalmic surgeon.

NOTES ON BOOKS.

ONE of the medical matters that has had more than its fair share of publicity and discussion in the daily press recently is the subject of painless childbirth. The methods employed in its production are discussed in a semi-popular manner in two American works now before us. In both there are abundant references to the recent literature of the subject. Dr. HELLMAN[6] sums up in favour of the "twilight sleep" obtained by the use of scopolamine and morphine in competent hands, such as those of Gauss of Freiberg. Dr. DAVIS[7] finds the anaesthesia due to nitrous oxide and oxygen far preferable.

Miss NEWSOME's book on *Home Nursing*[8] is based on her experience in teaching members of the British Red Cross Society in Gloucestershire. It contains twelve chapters, in which the effort is made to cover all the ground a nurse should traverse in her training. It contains much information; one may doubt whether the art of compression has not been carried too far in its preparation. Thus on p. 47 we read: "The abnormal respirations are: Cheyne-Stokes, dyspnoea, oedematous, stertorous, hiccoughs. *Cheyne-Stokes* is common in brain, heart, and the typhoid state."

[6] *Amnesia and Analgesia in Parturition (Twilight Sleep).* By A. M. Hellman, B.A., M.D., F.A.C.S. London: H. K. Lewis and Co., Ltd. 1915. (Cr. 8vo, pp. 197. 6s. 6s. net.)

[7] *Painless Childbirth. Eutocia and Nitrous Oxid-Oxygen Analgesia.* By C. H. Davis, A.M., M.D. Chicago: Forbes and Co. 1916. (Cr. 8vo, pp. 134. 1.00 dol.)

[8] *Home Nursing: Comprising Lectures given to Detachments of the British Red Cross Society.* By Edith Newsome, M.R.B.N.A. London: The Scientific Press, Limited. 1916. (Cr. 8vo, pp. 168; 38 figures. 2s. 6d. net.)

SIR WILLIAM POWER.

By J. C. McVAIL, M.D.,
Edinburgh.

I DOUBT whether any but a very small part of the medical profession realizes what a great man it has lost in the death of Sir William Power. As the official head of the Public Health Service of England some degree of publicity was unavoidable, but he shrank from notoriety as from a plague, and was never so happy as when he had succeeded in giving to some one else the whole credit for investigation and achievement initiated and largely accomplished by himself. This habit of effacement was illustrated in many ways. He would not attend meetings where he might be called on to speak; he would not be photographed; the *Medical Directory* contained only the very minimum of information concerning him. All his official work as medical inspector and finally medical officer had to be done of course within the limitations of the administrative system of the Board which he served, but to those who had the privilege of knowing him well he was an inspiration, and there was no higher reward than his approval of a completed task. In spite of frequent illnesses—due especially to attacks of influenza—he was a tireless worker, and even insomnia was utilized as affording time to continue his labours. "The night cometh when a man can work" was his explanation of how he accomplished so much, and his daily railway journeys from and to his home in Kent or Surrey were devoted to official "papers." He complained sometimes of having to take a holiday, and argued against it because return to duty was apt to be followed by illness of some sort.

Power had an admirable mental equipment. He had a faculty of scientific imagination which helped him to the solution of difficult problems. "What hypothesis or hypotheses," he seemed sometimes to ask himself, "would satisfactorily account for this given series of puzzling facts?" It was mainly in this way that he evolved the theory of the relation of bacterial life to the plumbosolvency of certain moorland waters, and subsequent laboratory experimentation was found to justify his conception. His knowledge and study of natural history had impressed him with the possible or probable inter-relationship of the diseases of men and animals. This possibility he bore in mind in investigating, for example, the question of the conveyance of scarlet fever and of tuberculosis from the bovine to the human animal by means of milk. Though he exercised great care and took sufficient time in reaching conclusions, yet, having reached them, he quite disregarded the likelihood of criticism or dissent. His chief, Sir George Buchanan, used to say that Power was the most logically-minded man he had known. He followed where facts and the study of facts led, though the exploration might take him quite away from any beaten path. This was exemplified in his reports on the influence of small-pox hospitals in the spread of that disease.

Power had a remarkable faculty for mastering the principles and application of sciences which had been non-existent or in a comparatively elementary stage when he was a medical student. He had, needless to say, no opportunity for laboratory work in bacteriology or in the developments of chemistry, but he acquired a grasp of these subjects, which helped towards qualifying him to be an admirable chairman of the latest of the Royal Commissions on Tuberculosis and an invaluable member of the Royal Commission on Sewage Disposal. I think he had always misgivings as to some of the lines followed by the modern crusade against tuberculosis, lest disappointment should follow and the public health service be discredited, but where he could not give support he held his peace and did not interfere with the activities of more sanguine missionaries. It is not for an outsider to speak intimately of Power's relations to his colleagues in the medical department, but a long and somewhat intimate acquaintance with many of them may, perhaps, justify me in saying that he seemed not merely appreciated and respected, but admired and beloved alike by his seniors and by his contemporaries and by the juniors whose work he so wisely and kindly guided and supervised. His absolute unselfishness and his constant helpfulness, based on the tripod of great ability, great knowledge, and great capacity for work, could not but be of signal value to his colleagues and of signal service to the State.

On the personal side Power had a rare gift of friendship. His qualifications included a never-failing readiness to appreciate a point of view different from his own, and to throw his whole mind into the consideration and discussion of a question which was occupying the other man's thoughts. He used to say that officially his brain was a kind of gland through which all sorts of material had to pass for rejection or acceptance and digestion, and his half-amused grumble was that often it had not finished dealing with one substance before another was forcibly thrown into it. But this natural or acquired capacity for considering the most varied problems was always at the service of others.

MOTOR NOTES FOR MEDICAL MEN.

By H. MASSAC BUIST.

Possibilities of Relieving the Fuel Situation.

According to Mr. Harcourt, the medical profession and veterinary surgeons have between them been allotted a total of 418,750 gallons of petrol a month, against 700,000 gallons for all users of private cars in the country and 2,087,500 gallons for all the cabs, omnibuses, and so forth. It is nevertheless a fact that many medical men have been allotted quantities of petrol quite inadequate to suffice for the total amount of professional work they have to do.

Where allotments have obviously been made in error, some relief will be received on the fact being established, though under this head we must not overlook the major facts, which are:

First, that a greater amount of petrol has been allocated by the aggregate of licences than the total quantity that it is anticipated will be available for civilian needs in these islands during the next six months.

Secondly, that whereas in the first six months of 1915 more than twice as many gallons of fuel were imported from the United States as in 1914, nevertheless the first six months of this year have witnessed a severe drop in such imports when compared with the corresponding period of last year, the fall from 32,260,000 gallons to 23,290,000 gallons being due to want of tank vessels.

Thirdly, that the needs of our army in respect of motor fuel will increase continuously from now on because we feed the guns and men engaged in the great offensive by motor transport, which we need more and more in measure as we advance over broken ground, the railway systems of which have been obliterated for the time being; and because in the warm summer days consumption attains its maximum efficiency, whereas in the cold winter weather much of the heat of burning petrol in the cylinders of an engine is wasted by the cooling effect of the atmospheric temperature, apart altogether from the heavier road conditions that generally obtain. One estimate of consumption for the services is to the effect that it will rise to 1,000,000 gallons a day, or thrice the entire petrol consumption of the country the year before war broke out.

Fourthly, because our increasing industrial activities to produce the requisites for carrying on the war will necessitate ever-increasing allotments of fuel for motor transport under this head, especially in view of the increasing curtailment of our horse supplies as the war proceeds.

Fifthly, because, on the average, the industrial allotments of petrol have been inadequate to a greater degree than the allotments to the medical profession; hence the early intimation of the Ministry of Munitions to the effect that wherever the allotments made were inadequate to those concerned with Government work, the fact should be notified to that department, which would see to it that there was no restriction of enterprise due to lack of motor transport. Therefore we may expect that relief to be granted under this head will absorb more than the total amount of extra fuel that may come to hand, or that might by any chance be left on the market owing to individual private motorists finding their allotments so inadequate that they prefer to lay up their cars.

The Offer to Augment Imports by 66 per Cent.

Next as to possible sources of relief in these days of submarine enterprise and so forth, and when there is ever an increasing field for petrol in South America and other countries at a safe distance from the European conflict. These safer and no less profitable markets are being preferentially exploited by neutrals. The prime need of the nation is for tank vessels. Our maximum efforts in this connexion can barely keep pace with the growing demands of the services. Consequently we need only consider prospects of obtaining extra supplies of motor fuel for civilian use when those supplies form part of schemes that embrace the production from overseas sources of the tank vessels whereby alone the extra fuel can be brought to these islands.

Such an offer has been submitted to the Government from a Canadian source, understood to be the Crown Oil Company, of Hamilton, Ontario. Another similar offer on behalf of a Colonial company is mooted, but does not emerge definitely yet. The Canadian one, however, is on a scale that would provide tank vessels for bringing fuel here from this fresh source to the extent of 4 million gallons a month, or 48 million gallons a year, which, with the 70 million gallons already estimated to be available for civilian uses, would give us 118 million gallons a year towards total requirements, amounting to 153 million gallons for the civilian community, according to the census of petrol requirements. To put the matter another way, the civilian community needs nearly 13 million gallons a month, whereas the present quantity of fuel available for distribution is estimated at less than one-half that figure—namely, 6,300,000 gallons a month—so that an additional four million gallons a month from Canadian sources should provide enormous relief to the situation, particularly as obviously such a supply would be distributed first in alleviation of the case of commercial cars and industrial processes, and to meet the requirements of doctors and veterinary surgeons. In other words, the private car user and the private motor cyclist would necessarily be the last to share any such additional relief, particularly as the total estimated needs of the users of commercial vehicles, according to the census returns, amount to more than 6,300,000 gallons a month.

The only certain point about the present fuel situation of the medical profession is that all the members of it are practically assured of receiving each the full amount of fuel allotted to him, whereas in the cases of private motorists no such thing is assured. On the contrary, I should not be surprised to see no licences, beyond those now granted for three months, issued to private motorists. It will depend entirely on the course of the war.

How Petrol Comes Here.

Practically all the petrol that comes to this country from America arrives in the form of what we call third grade spirit. It has to be redistilled here before what motorists know as No. 1, or even No. 2 spirit is produced. The average motorist in the United States drives on a fuel about equivalent in quality to that used by the London General Omnibus Company to date. Petrol, even of this third grade, has to be imported in specially built tank steamers. The handling of it in course of landing it here is an elaborate and costly operation, attended by many unnecessary restrictions, particularly as regards storing it in bulk and the unnecessarily long distances from the actual main centres of distribution to the places where alone the authorities allow it to be unshipped. The result is that it has to be sent long distances by road and rail at great expense and in retail form to the large centres where the market exists.

Available Alternative Fuels.

The net outcome of the present motor fuel situation is a great deal of talk about the use of alternative fuels. Alcohol—which many regard as being the fuel of the future because it does not well up out of the ground, but is, instead, limited in quantity only by the extent to which beet and certain sorts of grain crops, from parts of which it can be distilled, are grown—is not available to us in this country, because we have done nothing in the way of establishing the necessary machinery either for cultivation or for distillation, though on the Continent the alcohol fuel industry has been appreciably developed in years past. As far as this country is concerned, however, during the war, we can look for no relief under this head.

Shortly before the campaign broke out there was established what may be styled a nucleus coal-tar industry concerned with the production of benzole in these islands. Germany has seventy makers allied in the Deutsche Benzole-Vereinigung, which embraces 1,100 sale dépôts, the present year's production to date being 140,000,000 kilos. No section of the civilian motor-using community, however, can look for relief under this head, even in face of alterations to the Board of Trade unit of gas for supply to the public; because all benzole is needed either for the Services or the aniline dye industry.

The production of the Scottish shale industry goes to the Government.

The medical profession is therefore driven to a consideration of the problem of burning the heavier grade distillates of petroleum, such as paraffin, or a type of white oil from which the fatty substances have been extracted, and which is to be marketed in strictly limited quantities by the

Anglo-American Oil Company under the name of "Petrofin," which is a distillation from spirit distillate as imported into this country. For motor purposes it is superior to the ordinary refined petroleum oils, inasmuch as it has the tail or heavy residues cut out. There is talk of other fuels, chiefly of the mixed variety, coming from other sources. But the points the medical man has seriously to consider in the case of using any alternative fuel are the following:

(*a*) Will it work with a standard carburetter or involve the purchase of some special alternative device concerning which the question arises whether, assuming that it will answer in this warm summer weather, it will prove practical for starting up in winter, since a car that cannot be got going quickly is worse than useless to the medical man.

(*b*) What guarantees are there that the given alternative fuels will be procurable continuously from now onwards throughout the period of the war, since it is both expensive and unpractical to lay out capital on the purchase of an alternative fuel carburetter device if the fuel for it can be obtained for a few months only.

(*c*) Will the employment of the given alternative fuel do any hurt to the mechanism of the engine?

As to the availability of alternative fuel supplies we know, first, that in the case of petrofin these will be strictly limited; while in the case of paraffin there are not vast stores in the country, and what there are have been bought by utility vehicle users; hence all subsequent supplies will have to be imported. Though this will not necessarily be so difficult as in the case of the more volatile spirit, petrol, nevertheless, extra ships will have to be provided to bring in any such additional supplies.

Some guess of the situation of the individual medical man endeavouring to obtain a share of future imported paraffin supplies may be had from the fact, first, that the Government is seriously considering the desirability of relaxing regulations concerning the emission of smell by vehicles using alternative fuels; secondly, that the London General Omnibus Company is understood to have completed its experiments with a paraffin carburetter, which it would be useless to standardize unless arrangements have already been made to ensure continuous supplies; and, thirdly, that the petrol licences do not contain the word "petrol," but "motor spirit." Therefore we may assume that huge contracts for the continuous supply of paraffin or other heavy grade fuels either have been or are about to be placed by the big carrying corporations, consequently the medical man who is minded to use paraffin would be wise first to enter into a contract for continuous supplies with a firm, if any be available, of such standing as shall at least offer a reasonable prospect that the conditions of the contract will be fulfilled. Even so, however, there are risks. If alternative fuels come to be used to any appreciable extent sooner or later the Government will be bound to treat them in the same fashion as petrol, in connexion with which a regulation has been issued under powers conferred by the Defence of the Realm Act whereby all contracts for supply may be broken.

How to Proceed.

Thus it is well to realize that at this stage of the war it is absolutely impossible for the medical man to take steps which will positively ensure his having adequate supplies of motor fuel for the rest of the campaign period. All he can do is to weigh these and other obvious factors against one another, form his own estimate, and take what is nothing more than a sporting chance, remembering that the utility vehicle users have for some time been very active buying up all manner of alternative fuel supplies in the country.

The method of procedure which will probably be found to be most practicable for the average medical practitioner in the country is to continue to employ his car with the carburetter as supplied by the makers, and endeavour to eke out his petrol allowance by mixing a certain amount of paraffin with it. The advantages of this method are, first, that no permanent outlay of capital for buying a paraffin vaporizer is involved; and, secondly, that the practitioner does not commit himself definitely to paraffin, or some other alternative fuel the supply of which may, for reasons already indicated, fail the individual medical man at any moment without warning.

The disadvantages of such experimenting are that one is apt to start off in too great a spirit of optimism, as, for example, by taking half a tankful of paraffin and mixing it with half a tankful of petrol. That is quite the wrong way to proceed, particularly at this period when the average petrol supplied is of much heavier grade than obtained before the war. The proper way to set to work is to begin with a very small proportion of paraffin to petrol, say 10 or 12 per cent., and gradually to increase the proportion of heavy fuel if and as the carburetter is found to take it. Scarcely any ordinary carburetter will take half and half. Some, though few, experimenters with this sort of mixed fuel are wary enough to weight the floats of their carburetters to counteract the effects of the greater density of the fuel. Even so, I find that even among professional motorists sparking plug troubles are a frequent and early consequence.

The Use of Paraffin by Itself.

Assuming, however, that the individual medical man is satisfied that he can secure sufficient supplies of pure paraffin to serve his purpose—despite the fact that the wording of the petrol licences now granted makes it abundantly apparent that, if the present extra and sudden demand for paraffin or any other substitute for motor fuel upsets other industries and trades by causing the price to advance rapidly, or defeats the aim of the Exchequer in the matter of revenue raising, such alternative fuels will be embraced in the scheme for taxing and licensing motor fuel supplies during the war—there are some further points concerning which he should be informed before making a final decision. In the earliest days of the motor movement the Government and the public alike were a great deal more frightened of petrol than they are to-day. Hence an extraordinary amount and variety of experimenting was then done with paraffin carburetters, a fact which we are apt to forget because that enterprise was not crowned with success. For months past, not only the big carrying corporations, but also all the big motor manufacturers concerned in the production of utility vehicles, have been experimenting with paraffin vaporizers, a number of these devices hailing from America. Furthermore, that the situation may be judged, one may give a hint to this effect: it would be erroneous to imagine that no attempt is being made towards using paraffin abroad in connexion with army service.

The burning of paraffin in the larger, heavier vehicles has an advantage deriving from the fact that they work at a lower piston speed than the average touring car. Nevertheless, certain makers of chassis that are used for passenger car work are conducting experiments with paraffin carburetters, and with two-fuel varieties. In my last notes in the British Medical Journal I mentioned that Willys-Overland were experimenting with a device, not of their own evolving, for using the electric current in connexion with the engine-starting apparatus to warm a special carburetter and the intake pipes sufficiently and very rapidly to enable the engine to be started on pure paraffin, at least at this period of the year. Now there is talk of the Ford Company making a two-fuel carburetter. Two-fuel carburetters, of course, are numerous, those on the market including the Binks, the King-Zenith, and the Smith-King, to name three only out of a large variety.

A Suggestion.

Even more interesting is the letter from Dr. F. W. Style, published below, concerning his three months' satisfactory experience in Devonshire with a "superheater" that has enabled him to run his Ford car on paraffin at 1s. a gallon once the engine has been started on petrol. His experience indicates that in three months' running he has already economized the cost of fitting the "superheater" and making the necessary alterations. Thus, if he continues to get the same results that he has obtained to date, from now onwards he will be saving a matter of £30 a year. His tip about turning on to petrol just before stopping the engine, so that the carburetter is full of petrol, is valuable.

Inasmuch as I have shown how very experimental is this matter of using alternative fuels, and as it is impossible in the time available to relieve the fuel problem arising out of the war through exhaustive tests carried out by the recognized automobile trials body, it would be to the best interests of the medical profession if doctors in various parts of the country would furnish the British Medical Journal with their experiences of the use of alternative fuels, and of special carburetter and of other

auxiliary fittings wherever such experiences have varied from those recorded in these pages.

A Note of Warning.

In the meantime a note of warning should be sounded concerning one source of trouble that may result from the use of paraffin, and concerning which it is necessary to be careful. By reason of its quality of very rapid evaporation, just before ignition petrol is in the cylinder in the form of vapour; whereas with paraffin the evaporation ordinarily remains incomplete the moment before the spark ignites the mixture present in the cylinder, when the paraffin is rather in the form of spray than vapour, even in the cases where hot water jackets are employed. The extraordinary power of rapid percolation possessed by paraffin constitutes the chief danger of using it. For instance, if it is in the cylinder in the form of spray, often the spark fails to ignite all the globules. In practice, paraffin spray easily percolates past the pistons, and, descending by gravity, is enabled in a brief space of time so to thin the oil in the base chamber as to render it no longer suitable for its work of lubricating the engine bearings, which are injured in consequence. In the ordinary way one hears the argument against the use of paraffin that it results in sooty plugs. Though this, of course, is caused by incomplete combustion, nevertheless it is a result of no importance whatever compared with the destruction of the lubricating scheme of the engine.

In many devices for using paraffin the heat of the exhaust gases of the engine is used to warm the carburetter and intake pipe, while in most modern European cars of up-to-date efficiency the carburetter and intake pipes are hot-water jacketed. Either of these arrangements, however, suffers from the practical disadvantage that at the time we most need the aid of heat they do not render it available—namely, when starting up the engine from the cold. Even with a spirit so highly volatile as petrol this may become a serious difficulty in cold weather. In the case of heavy grade fuels like paraffin it is impossible to start from cold. Hence, on the one hand, the wide variety of bi-fuel carburetters on the market whereby the engine can be started on petrol and, as soon as it is warmed, run on paraffin, and, on the other, the devices for warming the intake pipe by electrical means from the storage battery on the vehicle before the engine is started. This latter idea was really brought into practice first by a car standardized to use petrol and furnished with the original and still the best mechanical engine-starting apparatus of the electrical variety. I refer to the Cadillac vehicle, wherein the idea of pressing a button and using electricity to heat the engine and intake pipes while the motor was cold was evolved to relieve the Delco engine starting apparatus of a great deal of unnecessary work when it was set to start the engine in winter time in very cold countries.

The Medical Man's Most Practical Course.

If he has no apparatus for warming his carburetter and intake pipes the medical man whose car is equipped with a mechanical engine starter will be just as ill off in regard to the difficulty of starting on pure paraffin in cold winter weather as the practitioner who cranks his motor by hand. On the whole, at the moment the two-fuel carburetter, or the carburetter with some adaptor device whereby the medical man can warm his engine on petrol, suggests itself as being the most likely course to give him satisfaction, particularly as in the matter of receiving petrol rations he is in a privileged class. Therefore, betide what may, certainly he will be assured always of sufficient petrol supplies to start his engine not only before issuing from the motor house but also on leaving the house of each patient.

I trust, moreover, that I have made it abundantly plain that there are very solid grounds for entertaining a doubt whether the medical profession as a whole, and apart from an individual exceptionally favourably situated here or there, will be able to secure for the continuance of the war adequate supplies of paraffin or other alternative heavy-grade fuel. In this connexion announcements about the advent of such alternative fuels and their availability should not be accepted by the medical profession without careful investigation. In some cases a new fuel is accompanied by the announcement that so many million gallons of it are in stock. Suppose the individual medical man were to have his car altered to enable it to use such a fuel only to discover that the given number of millions of gallons was the total quantity the vendors ever had it in mind to dispose of? The country's consumption of motor fuel is so great an amount that what it is necessary to consider is: What is the rate at which alternative fuel supplies can be maintained by the vendors?

Another point to have in mind is that paraffin, as an example of a heavier grade fuel, should really give a better mileage than petrol. If it gives only the same mileage per gallon, it cannot be burning perfectly. We know that, on the average, it has not yet been found to burn perfectly; hence the question brought before the Local Government Board, and being considered by it, touching the official attitude to be adopted towards the emission of visible or malodorous exhaust, which is a sure sign of imperfect combustion. As to medical men entertaining fears that they will be harried by the authorites on purely red tape lines if alternative fuels they may use shall come under these heads, I do not think there is much ground for apprehension. I understand at the time of writing that fumes from burning paraffin, for example, may be regarded as either "temporary" or "accidental." Certainly, it ought to be so because the fuel crisis has been almost entirely due to Government neglect arising from its failure to realize in sufficient time the importance of motor fuel to an island nation waging the biggest war in history and in a motoring age; also because, without practical experience all over the country, it will be impossible for us to progress sufficiently to discover how to ensure perfect combustion at all times and under all conditions in the case of much less volatile fuels than petrol that will have to be used not only during, but also after, this war; and, lastly, because it has not been proved that there is anything injurious to the health of the community in visible or invisible malodorous vapours resulting from imperfect combustion of motor fuel.

The fuel problem is one that is likely to occupy increasing attention from the Government for a long time to come. At present it appears to realize merely that it is a very serious problem. Seemingly, it has yet to be educated to the extent that will enable it to grasp the point that the time factor is all-important in dealing with this problem.

Practical Experience of Paraffin.

Sir,—It may possibly interest Ford car owners to know that three months ago I fitted a "superheater" to my car, which has enabled me to run on pure ordinary lamp oil at 1s. a gallon, and that the car runs in every respect as well as it did on petrol.

The total cost of superheater, together with cost of fitting and of certain alterations I made, amounted to £6 18s. 6d. The mileage with paraffin is the same as with petrol, so that using, say, 30 gallons a month and allowing for a small quantity of petrol for starting, etc., the "superheater" pays for itself in less than three months, whilst the annual saving works out at about £30.

As sent out by the makers, the superheater was provided with a glass reservoir, connected with inlet pipe. This had to be filled with petrol each time one wished to start up. Finding this a nuisance, and extravagant with petrol, I discarded it, and had an auxiliary petrol tank fitted. By means of a three-way tap, worked by a lever near the driver, having started upon petrol, one turns off the latter after a few minutes and gets on to paraffin without any trouble.

Naturally there are certain drawbacks to the use of paraffin. So far as my experience goes they are as follows:

(*a*) The piston heads require cleaning more frequently; I have had mine done three times. On a Ford this is not a very difficult job.

(*b*) Inability to restart without injecting petrol after the superheater has cooled down. This is not a very serious drawback, as petrol can easily be injected through a tap on the inlet pipe and a teaspoonful is sufficient. In the event of a lengthy stop, in order to avoid trouble in restarting, I turn off paraffin a few minutes before stopping the engine and get on to petrol, so that the carburetter is full of the latter when I wish to start up again.

When first installed I did not get quite such good results as I am now getting. There is a certain difference in driving on paraffin, but after a few weeks' experience one notices no difference whatever.—I am, etc.,

South Brent, Devon, Aug. 1st. F. W. Style.

British Medical Journal.

SATURDAY, AUGUST 12th, 1916.

WAR PENSIONS AND DISABLED MEN.

The debate on war pensions in the House of Commons on August 8th elicited a good many criticisms and ended in the Government consenting to a conference. Mr. Wardle, the acting chairman of the Labour Party, declared very emphatically that funds voluntarily subscribed by the public, or by the workmen, must not be used to diminish the State's obligation, nor to favour the exploitation of pensioners, whether men or women, by employers who wanted cheap labour. The debate, if it showed nothing else, made it clear that the allocation of pensions so that they shall be just, both to the pensioner and to the community, and shall not cripple the productive power of the country for a generation, presents administrative questions of great difficulty and complexity. No reference was made during the debate to the question of the treatment and re-education of the disabled soldier. It is an aspect of the matter that must particularly appeal to the medical profession which knows how much may be done in this direction by prompt and efficient treatment.

As long ago as May, 1915, an interdepartmental committee appointed by the then President of the Local Government Board stated at the outset of its report, and as its principal recommendation, that "the care of the sailors and soldiers who have been disabled in the war is an obligation which should fall primarily upon the State, and that this liability cannot be considered as having been extinguished by the award of a pension from public funds. We regard it as the duty of the State to see that the disabled man shall be, as far as possible, restored to health, and that assistance shall be forthcoming to enable him to earn his living in the occupation best suited to his circumstances and physical condition." The Committee went on to point out that under the existing system the responsibility of the naval and military authorities for the medical or surgical treatment of a disabled man ceased on his discharge as unfit, and that it rested with the medical officers under whose care the man had been placed to decide whether the patient was fit for discharge, and, if so, to set in motion the necessary machinery. "This decision," the Committee continued, "is often taken as soon as it has become clear that the man will not be able to return to active service, and without much regard to the question whether his health or his physical condition can be improved by further treatment. We suggest that the State should take a liberal view of its duties in this respect, and that it should assume the responsibility for the treatment of the disabled sailor or soldier and his restoration to health, when practicable." The Committee contemplated the establishment of a central committee with subcommittees in Ireland and Scotland, and local committees in various parts of the United Kingdom, which recommendation may be held to have been fulfilled by the appointment of the War Pensions Statutory Committee with its network of local committees. A section of the report dealt with the provision of employment and training for the disabled sailor or soldier, but the recommendations in respect of training were hazy, and in particular there was a complete failure to grasp the fact that the retraining of a man to earn his living should be begun at the earliest possible moment of his convalescence, and that such training is itself a therapeutic measure—probably the most powerful that can be employed. A surgical operation, perhaps bloodless, may be necessary to move a stiffened joint; machines may be useful to maintain or increase the amount of movement produced passively by the surgeon; massage and electricity, judiciously applied, will help to maintain the nutrition of muscles, but in perfecting the cure nothing will replace the voluntary intentional act. When by the use of mechanical appliances for exercising the limbs, the hand, or the foot, a certain stage of recovery has been reached, it is essential to bring in the patient's volition. Gymnastics under a skilled instructor are useful, and even necessary; they bring into the service of the cure the patient's own will power, and he is encouraged by seeing other men with similar disabilities accomplishing exercises of the kind he is told to practise; but to most people they become monotonous after a time, and they should be reinforced, or replaced, at as early a stage as possible by giving a man some definite work, so that when he has accomplished it he may feel that he has really done something useful. If he is given carpentering, or iron work, or gardening to do, he will, without thinking about it, co-ordinate groups of muscles to achieve certain definite ends, and the improvement in the nutrition of the muscles will then be remarkably rapid. A man who is making a box, or cutting a sheet-iron splint, or pruning a tree, is not thinking about how to move his hands or limbs according to the instructor's rules. His mind is full of purpose, fixed on the job. He is, perhaps, annoyed that his arm is weak or his fingers clumsy, and the spice of the devil that is in most men makes him will that they shall obey. This is as much as to say that the nervous system and the grouped muscles are stimulated to work by their natural normal stimulus, which is the will's will that some act shall be performed.

We are able to publish this week a number of communications explaining the working of several parts of the organization for the treatment of disabled men which Sir Alfred Keogh and the medical officers associated with him in the matter have worked out. The account of the Tipperary Command Dépôt, for which we are indebted to Dr. C. E. Ryan, gives a graphic picture of the general working of such institutions, while the paper by Major Tait McKenzie shows the results that may be obtained, and explains some of the means in use. Major Tait McKenzie, who is a Canadian by birth, is professor of physical training in the University of Pennsylvania, and for the last year has been placing his unrivalled experience at the disposal of the War Office for the benefit of British soldiers. To these accounts of British arrangements we have been able to add a description of the Belgian organization, and some details with regard to the French arrangements, the development of which has from time to time been recorded in our columns. Only a passing reference is made to the military hospitals established for men who have lost their arms or legs, and the arrangements for supplying them with artificial limbs, because these have previously been described at some length.

Speaking generally, it will be seen that while the British arrangements for the surgical and medical

treatment of disabled men are admirably devised and only stand in need of certain expansions and extensions, which we understand are now under way, those for the training of men in trades adapted to their disabilities have not yet reached the stage attained in some other countries. This defect ought quickly to be remedied, and we have no doubt that the British Red Cross Society will be anxious to take a hand in the work. Looking at the matter from a medical point of view, it is clear that orthopaedic treatment, including massage, electricity, and gymnastics, must go hand-in-hand with trade training, and that, in fact, as the director of the Belgian institution points out, both should be carried out at the same place. The responsibility of the War Office for the treatment or trade training of a man ceases when he is declared to be unfit to serve in the army, but it will be most unfortunate, both from the point of view of the man himself and of the community, if continuity of treatment is not maintained. It ought not to pass the wit of civil administrators to devise a scheme which shall ensure that the advantages of the fine organization developed by the army shall be continued for the benefit of men wounded in the war and so disabled that it cannot be hoped that they can again be fit for military service.

A TREATMENT FOR MENINGOCOCCUS CARRIERS.

The season of the year at which cerebro-spinal meningitis is expected to be most prevalent is now over. To judge by the experience of the last two years, the next outburst of the disease is not due till the coming of next year. Now, therefore, would seem to be the time for considering what can be done to lessen the number of the carriers of the meningococcus, because it is generally recognized that cerebro-spinal fever is a disease spread by persons of any age and either sex who chance to harbour that microbe in their throats or noses. It appears that in London, at any rate, the percentage of meningococcus carriers among the ordinary population may be quite large. Thus Dr. Eastwood recently unearthed—or should one say nosed out?—49 among 480 hospital out-patients who were not known to have been in contact with any cases of cerebro-spinal fever, but who were yet carriers of a microbe believed to be identical with the meningococcus. Similarly Dr. Scott found that as many as 22 per cent. were meningococcus carriers out of 138 non-contact out-patients at Lambeth Infirmary. Are such carriers a danger to the community? If so, can anything be done to render them less dangerous?

In endeavouring to answer the first of these questions, bacteriologists have naturally tried to establish criteria that will enable them to decide whether any given meningococcal strain derived from the naso-pharynx of a supposed carrier is either pathogenic to human beings and capable of producing cerebro-spinal fever, or merely saprophytic and therefore negligible. There is at present no agreement as to the absolute value of tests to distinguish between pathogenic meningococci and those that are presumably harmless saprophytes. The cultural characteristics of the two are indistinguishable; their powers of fermenting sugars are identical; and serological investigations based on agglutination tests with the serum of immunized animals do not so far seem to have rendered possible in all hands a confident discrimination between the two. In fact, the only available way of deciding at the present time whether a carrier of the meningococcus is or is not a source of danger to himself and others is that recommended on a historic occasion—Wait and see—not always a safe policy. If the meningococci are of the virulent type they will no doubt give rise to an outbreak of cerebro-spinal meningitis in the circle of those with whom the carrier comes in contact. If they are of the saprophytic type, nobody will be a penny the worse.

This uncertainty as to the virulence or harmlessness of any given type or strain of meningococcus obtained by cultivation from the naso-pharynx of a carrier seems to have given rise to two schools of medical thought, so far as the attention to be paid to such carriers is concerned. The opinion of one of these schools is expressed by Dr. Eastwood in a recent Report to the Local Government Board in the following words: "My present opinion . . . is that all naso-pharyngeal strains, as defined above, should be regarded as possibly capable of producing cerebro-spinal fever." It is obvious that any medical man who believes meningococcus carriers to be sources of real danger to themselves or others will not be content until he has reduced such dangers to a minimum by local treatment, segregation, or some other active measures designed to prevent the development or spread of cerebro-spinal fever in or by the carrier. The point of view of the other school of thought is put forward in a recent Report of the Medical Research Committee. Here it is argued that the 1915 epidemic is to be considered not really an epidemic of cerebro-spinal fever but as what may be termed a "saprophytic epidemic" of the meningococcus in the throats of the population at large, governed as to its local incidence by the opportunities afforded for transfer of the coccus from pharynx to pharynx. It is maintained that the epidemic prevails in winter and early spring because climatic conditions bring people into closer contact indoors at that season. It is concluded, therefore, that cerebro-spinal fever is an epiphenomenon of this epidemic due to a secondary systemic invasion by the meningococcus from its saprophytic focus in the pharynx, and that at present we do not know the conditions which determine the secondary invasion. According to this view, the cases of meningitis should perhaps be regarded as beacons flaring up to give warning of the prevalence of the carrier condition in the local population; probably the bulk of the carriers found were carriers before the cases of meningitis occurred. Why the great majority of the carriers escape systemic infection, that is to say, cerebro-spinal meningitis, is an unsolved problem. The authors of the Report of the Medical Research Committee come to the conclusion that the direct source of infection in cerebro-spinal meningitis is usually to be sought, not in another case of the declared disease, but in the undeclared carrier. They recognize, however, that at present we have no laboratory methods for certainly discriminating between the carriers of saprophytic meningococci and those with meningococci that may give rise to meningitis. And, while making no direct statement as to the desirability of dealing with the carriers in any particular way or segregating them, they do not lead the reader to infer that they hold any such steps to be within the range of practical preventive medicine. So long as this is the case the practitioner who has to deal with a meningococcus carrier may perhaps be encouraged to "cling ever to the sunnier side of doubt," and in the treatment of such persons to follow a policy of masterly inactivity.

Quite recently, however, Lieutenant-Colonel M. H. Gordon has published[1] some preliminary observations made at the central cerebro-spinal fever laboratory which seem to show that in the new antiseptic chloramine (paratoluene-sodium-sulphochloramide),[2] we possess a drug that may prove invaluable in ridding the naso-pharynx of meningococci. By means of a Lingner's spray apparatus a 2 per cent. solution of chloramine was sprayed into a small room until the atmosphere was saturated with watery vapour; saturation was proved when the readings of wet bulb and dry bulb thermometers suspended in the room became equal. The meningococcus carrier then entered the room and breathed the disinfecting atmosphere for as many minutes as was deemed necessary—perhaps fifteen or twenty. Experience showed that this 2 per cent. chloramine spray could be tolerated by human beings for such periods without marked discomfort and without harm; if a 5 per cent. solution of the drug was employed the saturated air was distinctly trying, and, after two or three minutes, painful. A promising feature of Lieutenant-Colonel Gordon's experiments is that patients soon become accustomed to the chloramine spray, and that tolerance was speedily raised. One of his patients was freed from naso-pharyngeal meningococci after inhaling the spray for fifteen minutes, another after twenty minutes. While it is as yet too early to say that the method is a certain cure for the meningococcus carrier, it may at any rate be described as simple, convenient, and promising. Naturally it is still in process of investigation.

RECORD OF THE DISPENSING OF COCAINE.

We publish in another column the form prescribed by the Home Secretary as that in which all dealings in cocaine or opium are in future to be recorded, and it is to be presumed that we have now been made aware of all the restrictions with which any passing of these drugs from hand to hand will now be hedged round. Briefly, the position is this: Under the term "authorized persons" are included medical practitioners, dentists, veterinary surgeons, pharmacists and corporate bodies entitled by law to practise pharmacy, and such other persons as may be granted a permit by the Secretary of State, and it is made a summary offence to sell, give, procure, or supply to or for any other person either cocaine or opium, subject to the specified exception, or to offer to do so. The only exception is that cocaine may be supplied to any one on the prescription of a medical practitioner, provided this is signed with his full name, address, and qualifications, and also bears the words "Not to be repeated"; the total amount of cocaine to be supplied must be specified on the prescription, and the person or firm dispensing it must mark the prescription with the date of dispensing and the name and address of the firm, and must enter the full particulars in a book kept solely for the purpose. No such provision is made for the dispensing of opium; this, however, is to be explained by the fact that "opium" is defined as raw opium or powdered or granulated opium, and therefore does not include medicinal preparations of the drug, whereas "cocaine" is defined as including all preparations, salts, derivatives, or admixtures containing one part or more of cocaine in one thousand parts. The chief effect of the regulations regarding opium, so far as medical practitioners are concerned, is that powdered opium cannot be supplied, even to a medical prescription, unless the person for whom it is prescribed happens to be an "authorized person"; preparations of opium in powder form, however, such as the compound powder of opium or the compound powder of ipecacuanha of the *British Pharmacopœia*, do not appear to be interfered with, and it can only very rarely happen that it is desired to order powdered opium by itself. In the Proclamation[1] prohibiting the importation of cocaine or opium, except by licensed persons, "opium" is defined as including any solid or semi-solid mixture containing opium, which would embrace such compound powders as those just named; evidently the more restricted meaning has been adopted in the Regulations for dealings in opium within the country in order not to interfere with the proper medicinal use of such powders.

Medical men who dispense their own medicines are in law selling the medicine; but even if it is supplied gratuitously the transaction is just as effectively covered by the wording of the Regulations, and they must observe exactly the same rules of procedure as a pharmacist so far as these are not excluded in the nature of the case. For example, there is no presenting by the patient of a prescription to be dispensed, and therefore there is no marking on the prescription the date of dispensing and the other particulars required of a dispensing chemist, but a full entry must be made, in a book kept specially for the purpose, of the ingredients of the medicine and the name and address of the person to whom it is sold or delivered; presumably if the medicine is not handed to the patient personally, it will be necessary to enter the name of the person to whom it is actually delivered.

The form prescribed by the Home Secretary for keeping these records is printed in the Supplement this week, and it will be observed that it is intended for dealings in opium as well as cocaine; but in the letter which we have received from the Home Office it is merely stated that medical practitioners must use this form in recording all cases in which they dispense cocaine. The explanation, no doubt, is that (as noted above) no provision is made for the dispensing of "opium," as defined in the Regulation—namely, "raw opium or powdered or granulated opium"—by any one, and it is naturally assumed that medical men will not sell or otherwise supply opium to authorized persons; if they should do so, the transaction would have to be recorded in the prescribed form.

The number of cocaine preparations in fairly general use which will come under these regulations is somewhat large. Of the compounds of the *British Pharmacopœia*, hypodermic injection of cocaine, cocaine discs, krameria and cocaine lozenges, and cocaine ointment contain more than 1 in 1,000. In the *British Pharmaceutical Codex* the number containing this proportion is much larger.[2]

The coca wine of the *British Pharmaceutical Codex* is in a somewhat uncertain position. It must contain at least ½ grain of alkaloid in each fluid ounce if it is to be sold without a wine licence; and if this alkaloid were all, or almost all, cocaine, the amount of the latter

[1] British Medical Journal, 1916, ii, 8; *Journal of the R.A.M.C.*, 1916, xxvii, 92.

[2] See British Medical Journal, 1916, i, 160.

[1] Supplement, August 5th, p. 58.

[2] It includes menthol and cocaine snuff, adrenine spray with cocaine, compound benzoin spray with cocaine and quinine, compound cocaine spray; eucalyptus, menthol and cocaine spray; compound menthol spray, menthol and cocaine spray, oleinate of cocaine, cocaine pastilles, cocaine and morphine pastilles, eucalyptol and cocaine pastilles, menthol and cocaine pastilles, cocaine eye ointment, atropine eye ointment with cocaine, cocaine pessary, borax and cocaine tablets, strong soluble cocaine tablets, soluble cocaine tablets, adrenine and cocaine suppositories, cocaine suppositories, cocaine tablets (chocolate), potassium chlorate and borax tablets with cocaine, adrenine and cocaine ointment, menthol and cocaine ointment, extract of coca, and liquid extract of coca, miscible.

would be more than 1 per 1,000. Usually, however, since coca contains other alkaloids as well, the percentage of real cocaine would probably be less than this, but the only safe plan will be to treat it as affected by the regulations. If a simple solution of a cocaine salt in water were supplied, this would undoubtedly be regarded as a sale of cocaine itself and not of a preparation, and therefore the 1 per 1,000 limit would not apply. Whatever the strength of the solution or the quantity, such a transaction would have to be recorded.

The requirement that the total quantity of cocaine ordered in a prescription shall be specified is perhaps intended to prevent the possibility of a patient obtaining double the number of doses ordered, though it may be merely to prevent any doubt or ambiguity as to the exact number of doses required. The remarkable exception of proprietary articles from the operation of this clause, provided the quantity of the proprietary article itself is stated, appears to be a most unfortunate error of judgement; if the cocaine strength of a proprietary article is not known and therefore the total quantity of cocaine cannot be stated on the prescription, this appears to be an excellent reason for requiring the proprietor to declare the strength on the label, and if proprietary medicines had not been thus illogically exempted, such declaration of strength would have undoubtedly resulted from the requirements of this clause.

DRUGS MADE IN GERMANY OR AUSTRIA.

Two resolutions were passed at the Representative Meeting of the Association dealing with drugs made in and formerly obtained from enemy countries. The first of these, recommending medical practitioners to avoid using drugs made in Germany or Austria, if substances of the same constitution manufactured by ourselves or our allies can be obtained, merely places definitely on record a view which is shared by every loyal person, and as to which there will be no difference of opinion within the profession. It raises, however, a very serious question as to what drugs, formerly made in Germany or Austria, are now or will in future be made in this country, and the second resolution deals more specifically with this point. This resolution instructs the Council to bring before the Government the advisability of guaranteeing protection to any firm that is willing to lay down plant to manufacture drugs and chemicals that were made in Germany before the war. However sympathetic one may be towards the general purport of the resolution, it must be admitted that it is highly unlikely that the present or any Government would be prepared to guarantee protection to *any* firm willing to lay down plant for the purpose named, even if the term "protection" be used in its natural and wider sense, and not in the limited sense (which will perhaps be attached to it by most persons as it stands in the resolution) of a protective tariff. While it is probably the opinion of a majority of chemical manufacturers that some form of Government assistance, by tariff or otherwise, will be necessary for a time if the manufacture of synthetic organic drugs on a large scale is to be put on a sound commercial basis in this country, there is certainly complete agreement that thorough organization of the industry, with a considerable degree of co-operation among manufacturers, is a far more fundamental requisite for its successful establishment. It will probably, therefore, be impossible to guarantee protection to *any* firm, regardless of the scale of work to be undertaken. The by-product of one chemical factory is the raw material of another; and for the successful commercial production of what are known as "intermediates"—such as sulphuric anhydride, carbonyl chloride, aceto-acetic ether, etc.—very large scale operation is essential. In an admirable paper on this subject, read at the recent annual meeting of the Society of Chemical Industry by a chemical manufacturer, Mr. F. H. Carr, the author expressed the opinion that "an immediate decision to extend for a period after the declaration of peace the prohibition against the importation of German chemicals would have a far-reaching effect by giving confidence to capitalist enterprise." Probably such prohibition would be sufficient to meet the desire expressed in the resolution adopted by the Representative Meeting, but Mr. Carr also gave it as his view that prohibition of long standing would bring about stagnation and do damage, and that if any tariff should be imposed the proceeds ought to be devoted exclusively to research and education. The need for improved scientific and technical education has been preached for so long that the subject may be thought threadbare, but, unfortunately, it is necessary still to insist upon it. There are many other ways, too, in which Government aid can be given without a protective tariff, such as that indicated by the remark, in the same paper, that "cheap and pure methyl and ethyl alcohols lie at the very foundation of fine chemical manufacture"; in this matter it is certain that Government action in this country has hitherto been the reverse of helpful.

THE HISTORY OF THE FIGHT AGAINST VENEREAL DISEASE.

MR. E. B. TURNER, F.R.C.S., has written for the current number of *Science Progress* a history of the movement the first stage of which terminated with the final report of the Royal Commissions on Venereal Diseases. The beginning of the second stage was marked by the issue by the Local Government Board of the circular and regulations which were the subject of discussion at the last Representative Meeting, over which Mr. Turner presided. No one is better qualified than he to write the story, for he was among the first of those who, twenty years ago, set themselves systematically to press upon public attention the gravity of the subject. After some preliminary spade work, during which the help of the late Colonel Long and Sir Victor Horsley was enlisted, it was decided to concentrate energy on the demand for the appointment of a Royal Commission to inquire into the prevalence and effect of venereal diseases. In 1898 Colonel Long drew up suggested terms of reference; the main headings were—to ascertain the extent of the evil irrespective of its temporary increase or decrease; to collect information as to existing arrangements for the treatment of venereal disease and the number of patients applying to hospitals and dispensaries; to collect opinions as to means for preventing or limiting the spread of these diseases; and, finally, to consider the possibility of so altering the law of libel, that while medical men should still be liable if they improperly divulged private information obtained in the course of their practice, they should yet be in a position to take action which would render interference possible by some sanitary authority, with a view to ensuring proper precautions being taken against danger to the community, and especially to innocent persons. A memorial on these lines was presented to the then Prime Minister, Lord Salisbury, who, believing that public opinion was not sufficiently informed and enlightened, took no action upon it. His decision, Mr. Turner thinks, was influenced by the belief that the disease was diminishing, that the Commission would be composed of men in favour of the old Contagious Diseases Acts, who would work up a scare with the object of reviving the Acts and applying them to the whole country, and that the disease was one which should be fought on moral and religious grounds. In 1899 the Brussels International Medical Congress passed strong resolutions, proposed by the British Medical Association, calling for full inquiry. In May, 1903, a

meeting was held with the present Archbishop of York in the chair, when resolutions were passed reaffirming this necessity. As a result a committee was formed under the chairmanship of Colonel Long, and was encouraged by a passage in the report of the Interdepartmental Committee on the physical deterioration of certain classes of the population recommending the "appointment of a commission of inquiry into the prevalence and effects of syphilis, having special regard to the possibility of making the disease notifiable, and to the adequacy of hospital accommodation for its treatment." The political upheaval of 1905–6 checked further action, but in 1911, after the Royal Commission on the Poor Laws had recommended that the law giving power to workhouse authorities to detain inmates suffering from contagious diseases should be extended to apply to persons suffering from venereal diseases in their infectious stage, Colonel Long's committee, with the support of many boards of guardians and city and borough councils, presented a memorial to the then President of the Local Government Board. Mr. John Burns was sympathetic, but did nothing. In 1913, shortly before the International Congress met in London, Sir Malcolm Morris and others who felt strongly on the matter resolved to appeal to the public, and drew up a manifesto which the *Morning Post* published in July. Public interest was aroused to a degree never before found possible. The strongly-worded resolutions of the International Medical Congress gave increased impetus to the movement of public opinion, and before Parliament rose the Prime Minister announced that a Royal Commission would be set up. The Royal Commission got through its work with commendable rapidity, and speaking of its report Mr. Turner says: "It is but the first act in the play. The rest must follow in due course, and the greater the success which may be expected to crown the adoption of many of the recommendations in this report, so much greater will be the enlightenment of the people with regard to these matters, and so much the more will it become possible to take further measures in the near future, which will even more effectually curb and remedy the ravages of this dread scourge."

SMALL-POX AND VACCINATION.

THE National Antivaccination League is in a precarious state of health, and efforts are being made to stimulate the waning generosity of subscribers—not altogether, we gather, with success. The causes of its indisposition are numerous. In the first place, the term "conscientious objector" is not one to conjure with just now; the ordinary person shortens it to "slacker," no doubt thereby occasionally doing some injustice. In the second place, even the most infatuated antivaccinist knows that all men sent to serve in the British army abroad are vaccinated, and that the British army has suffered little, if at all, from small-pox. Lastly, they know that inoculation against typhoid fever (often spoken of as antityphoid vaccination) has been even unexpectedly successful. It appears that the league has had to retrench, and among other things to dispense with the services of two paid agents, who for years have perambulated the country, spreading its fallacies in public parks and at street corners. It has also had to reduce the supply of the literature which these persons and others used to distribute. The public propensity for horrors is satiated, and others who love fiction prefer to lay out 7d. on a novel. At the same time, it is probably true that sufficient effort has not been made in this country to neutralize the baneful influences of the Antivaccination League. In the United States of America the public is regularly informed on the subject in the "Health Bulletins" of the cities. They are circulated gratuitously among the people, and a similar effort here would have combated the fallacies (often uncontradicted) which have found a prominent place in the press of this country. Dr. George W. Gay, of Boston, has published recently in the *Boston Medical and Surgical Journal* (April 6th, 1916) a paper entitled "The Truth about Small-pox and Vaccination," which, it is stated, has the endorsement of the president and secretary of the Massachusetts Medical Society. Dr. Gay summarizes the case for vaccination "succinctly as an invoice." Thus he writes that "systematic vaccination by the surgeons of the United States Army in six provinces in the Philippines having an approximate population of one million, reduced the annual small-pox mortality from 6,000 to nothing. During the succeeding years there was not a death from this disease in this region of a vaccinated person." Another instance he gives is that of Porto Rico where "800,000 natives were vaccinated by the medical officers of the United States army in 1898, with the result that small-pox was under control for the first time in the history of the island." Dr. Gay further illustrates his argument by references to the Boston epidemic of 1872–3, and the more recent experiences of the City of Niagara Falls, where, owing to the pernicious influence of one or more opponents of vaccination, a large proportion of the 35,000 inhabitants had neglected to be vaccinated. Small-pox broke out and spread, so that in order to "avoid quarantine and to prevent the destruction of the tourist business, the local board of health finally got busy, and over 20,000 of the inhabitants were vaccinated within a short time. As a result of this energetic and intelligent action the epidemic was soon under control." In concluding his paper, Dr. Gay refers to the safety and reliability of the vaccination of to-day, and pays a high tribute to the memory of Edward Jenner. Vaccination, he writes, "has saved millions of lives. It has prevented an amount of suffering, mental and physical, that surpasses comprehension."

WEIR MITCHELL AS MAN OF LETTERS.

MEMORIAL addresses and resolutions passed by the Philadelphia College of Physicians, the Council of the School of Medicine of the University of Pennsylvania, and a number of other bodies on the occasion of the death of Weir Mitchell have been collected into a volume.[1] Among the many tributes to the physician, the scientific investigator, and the man, the most interesting are those of Dr. William H. Welch and Mitchell's kinsman, the distinguished writer, Owen Wister, who supplies an appreciation, at once sympathetic and discriminating, of his qualities as a writer. Not a few doctors have won a place in the Valhalla of letters, but, as Sir William Osler said in the BRITISH MEDICAL JOURNAL on January 10th, 1914, we have not another instance of so distinguished a literary success in a man who at the same time was all his life actively engaged in professional work. Mitchell in his early days had felt the bitter truth of Johnson's words, "Slow rises worth by poverty depress't." It is all the more remarkable, therefore, that he did not put his pen to profitable use earlier, for his novels sold well and he said that his literary earnings were at times as large as those from his practice. Perhaps, like Scott, he thought that literature should be a staff and not a crutch. When very young he had got a hint to that effect from Oliver Wendell Holmes. Mitchell had sent a collection of verse to a Boston publisher, who submitted it to Holmes. The "Autocrat" advised the youthful poet to hide literature in his desk till medicine was full grown; 40 was the age suggested. Mitchell bettered the instruction, for he was 51 before a volume of prose stories, entitled *Hephzibah Guiness*, appeared with his name on the title-page, and 53 before his first long novel was published. Some unsigned verses by him appeared in 1857, and his last poem was a song to the Star of Bethlehem, written at Christmas, 1913, not long before his death. The fifty-six years between these dates in Mitchell's life were marked by more than forty separate publications in verse and prose—thirty-five of them after 1880. Besides this,

[1] *S. Weir Mitchell, M.D., LL.D., F.R.S., 1829–1914.* Philadelphia, 1914. (Med. 8vo, pp. 155.)

Mitchell produced a small library of scientific papers; Welch collected from the *Index Medicus*, the *Index Catalogue*, medical journals, and Mitchell's own printed catalogue, two hundred and forty-six references to books, papers and reports from his pen; and the list is incomplete. His literary faculty showed itself in his medical writings, which are marked by singular felicity of style. In his tales and poems, as Wister happily puts it, "every drop of ink is tinctured with the blood of the Civil War." He drew his material from his memories of boyhood, of Paris where he had been a student, of the war and the hospitals in which he had worked, of holidays in New England, and above all, from his experience as a physician. His trained power of observation gave him a knowledge of the roots of character and the secret springs of conduct, invaluable in the portrayal of human nature. Welch well says that Mitchell's literary works have much of circumstance, colour and insight which came to him as a physician. Many of his novels contain descriptions of doctors, patients, epidemics, and historical events of medical interest. Wister says that the success of Mitchell's novels increased until with *Hugh Wynne* it became a popular triumph. The fame of the book reached as far as Wales. In a graveyard there the sexton once pointed out to Mitchell, not knowing who he was, the graves of many real Wynnes, adding the information that the present head of the family lived in America, and his name was Hugh Wynne! All Mitchell's later novels were eagerly expected. His poems were less successful, though, according to Wister, it is in them that his best is to be found. Mitchell knew far more of evil and sorrow and pain than Balzac, Flaubert, or Maupassant. Four years of mutilated soldiers, and fifty of hysteria, neurosis, insanity and drug mania had shown him the darkest depths of human folly and frailty. But in one of his books he makes a doctor say, "Who dares draw illness as it is? Not I," a revealing phrase, which tells us the secret of his art. Although his novels abound in studies of decay—senile change in *Hugh Wynne* and *Circumstances*, hysteria in *Roland Blake*, and the insanity of persecution in *Far in the Forest*—he does not take pleasure in painting the sin and suffering of men. Consider, says Wister, what we should have had if Balzac, or Flaubert, or Zola had known what Mitchell knew about women! But no matter what muddy paths his muse had to tread, she always comes through with her skirts clean and her heart warm. She does not sneer at the evil of the world, she mourns over it. Mitchell's gospel is not of hate but of love. His books belong to what Wister calls the literature of encouragement.

HOSPITAL FIRE INSPECTION.

DURING the last two years the war work of the British Fire Prevention Committee has, we are informed, included the survey of many hundreds of hospitals throughout the United Kingdom with regard to the means which should be provided for the prevention of fires. The hospitals inspected have been of various sizes, and have included institutions utilized by the Red Cross, or St. John organizations, as well as civil hospitals taking military patients. The inspections have been carried out by a special fire survey force consisting of well-known members of technical professions and ex-public officials, acting under the general direction of the Earl of Londesborough, who is the honorary commandant. In the recommendations made due regard has been had to economy; simple fire preventive measures largely of an administrative character, simple fire drills, and the simplest of fire appliances, have been favoured, and nothing has been advised which might require exceptional skill in handling or any large expenditure. Many thousands of suitable posters and warnings in respect of fire precautions and air-raid dangers have been issued, and are to be found not only in practically every important institution in this country, but are to be seen also in colonial centres and in the war zones. In addition to hospitals and other medical institutions, the committee has dealt with practically every class of structure and every class of fire risk during the war emergency, and it is rather a matter for congratulation for the medical profession that in one of its official reports the committee has pointed out that the ready co-operation of the medical officers in instituting fire precautions showed how professional men prone to forethought are specially ready to take precautions in such establishments as hospitals and convalescent homes. As the vast majority of the military hospitals and convalescent homes are under the supervision and direction of medical men who in ordinary times are in civil practice, there can be no doubt that the interest they have shown in the past must have had a considerable effect on the safety of civil hospitals generally, whilst the more modern fire arrangements particularly developed by the committee during the war emergency will no doubt be applied to ordinary civil conditions after the war. We are informed that of the serious fires in hospitals during the past two years none, with one exception, have occurred in institutions that have been under the committee's care. The one exception was an establishment in the South of England on which the committee had reported, but, except for posting up the committee's warning notices, none of its recommendations had been acted upon at the time of the fire. In no hospital, so far, where the committee's recommendations have been adopted, has any fire, it is stated, extended beyond the area of a single room.

CONVICTIONS UNDER THE NEW COCAINE REGULATION.

THE first charges under the new Cocaine Regulation were heard on August 9th, when five persons were prosecuted at the instance of the Commissioner of Metropolitan Police. All the prisoners were convicted, three women to three months' hard labour and one to two months' hard labour and a fine of £5. The fifth prisoner was a man who, it was stated, had recently suffered six months' imprisonment for selling cocaine to soldiers. In sentencing him to six months' hard labour and fine of £100, the magistrate said that while a certain compunction might be felt for the wretched women there could be none for the men who made them their cat's-paws in an odious trade.

Medical Notes in Parliament.

War Pensions.

THE debate on August 8th on the Government scheme for war pensions and the work of the War Pensions Statutory Committee showed the Labour members in a critical mood, and ended upon the acceptance by the Government of a proposal for a conference between the representatives of the Statutory Committee and of the National Committee. Mr. Hayes Fisher, who opened the debate for the Government, said that the Treasury grant for supplementary pensions had been increased to £6,000,000, which on the estimated possible loss of life really equalled £7,500,000, so that substantially the State had undertaken to provide the whole estimated cost of the supplementary pensions of all kinds—that is to say, the Government had undertaken to find the money not only for pensions, but for supplementary pensions. After two years the adequacy of this capital sum of £6,000,000 would be reviewed. In settling the amount of individual pensions the Statutory Committee would depend largely upon the advice of the local Pensions Committees. Extra local grants from voluntary funds, given for special education purposes, holidays, outfits, and to meet other temporary requirements, would not be taken into account in estimating the regular income. The aim was to make a widow's pension from the State up to two-thirds of the pre-war income, but not going beyond 40s. a week,

and to make the pension of a totally disabled man up to a sum not exceeding 50s. a week and for a partly disabled man to a sum not exceeding 40s. a week. It was hoped that such bodies as the Navy League and the Kitchener Memorial Fund, which received large voluntary gifts of public money, would work with the Statutory Committee. Already 191 local committees were at work and 249 schemes had been approved; eventually there ought to be 259 local committees.

Mr. Hogge (Edinburgh) said that the proposal of the Government to take local funds into account in considering applications for supplementary pensions had excited considerable hostility, and if it were adhered to two of the largest benevolent corporations in Scotland would not pay a penny.

The Chancellor of the Exchequer sought to throw the whole responsibility of settling the amount of pensions and the total amount to be voted upon the House. The basis upon which the total amount had been calculated was so many pounds according to the total number of deaths, which he regarded as the most rational proceeding, since it was proposed to begin by giving the Statutory Committee a lump sum down. He agreed that this, as had been said, was an estimate "trembling in its conjectures and quaking in its hypotheses." The Treasury would review the whole question of supplementary pensions before the end of 1918, and would then determine what the total State contribution ought to be. The principle was that the State should pay a flat rate of pension without regard to a person's income or social status, and that this flat rate should be supplemented by additional pensions, into the provision of which the element of voluntary contributions would enter. The flat rate applied to officers as well as to men.

Mr. Wardle, acting chairman of the Labour Party, said that it appeared from what the Chancellor of the Exchequer had said that, so far as the amount of money the Treasury was prepared to put at the disposal of the Statutory Committee was concerned, it would be sufficient to meet the first pensions granted by Parliament—those, namely, which came from the War Office or Admiralty—the supplementary pensions to widows, the supplementary allowance to dependants, and the supplementary disablement grants, and that any compassionate allowances after and beyond these pensions would be given from private funds. He gathered that the obligations set out in the regulations of the Statutory Committee would be fulfilled by the State. He did not wish to interfere with local generosity, but it would vary in different places, the wealthier towns being able to give more money, and it was essential that the supplementary pensions should be definitely guaranteed by the State, that the amounts should be set out and provided by the State, and that there should be no raid on any other fund collected for any other purpose to make good a deficiency. Most of the trade unions had done two things already—they had excused their members who had gone into the army from paying contributions and had guaranteed them their benefits. If the trade unions continued these benefits it would be unfair that they should be taken into account in assessing the pensions given to a disabled man or to a widow or dependant. Again, most of the railway companies started relief funds at the beginning of the war and large sums had now been accumulated. Funds formed by deductions the railway men themselves allowed to be made from their wages should not be used to relieve State obligations. He condemned the regulations recently issued as complicated and involved, and hoped that they would be looked upon only as a draft and revised before they were finally issued.

Mr. Hayes Fisher interposed to say that the revision of the regulations by the Treasury might take months, and that it would be better to put the draft into force at once, and to revise the regulations after a few months in the light of experience.

Mr. Wardle, while agreeing that a delay of months would be most undesirable, reiterated his opinion that some of the regulations would be very difficult to work. The action of the Chelsea Commissioners in taking note of quite trivial matters for the purpose of revising and altering a pension made it impossible for the men to know whether they could rely upon the amount so as to arrange their life accordingly. The Labour members were putting their energies into the work with the idea that men and women would be granted reasonable and sufficient pensions, and that pensioned persons should not be exploited and employed at rates which were not remunerative by employers who wanted cheap labour. Trade unionists did not desire that a man or woman capable of being employed should be denied work because he or she received a pension, but they set their faces against any attempt to use those persons to pull down the wages or reduce the standard of the workers generally.

The debate continued on similar lines, and eventually, as has been said, the Government accepted the proposal for a conference.

On August 7th the Chancellor of the Exchequer informed Sir Henry Craik that the regulations made by the War Pensions Statutory Committee for supplementary pensions had been approved, so that it could proceed to put its scheme into operation.

War.

Examining Medical Officers.—On August 2nd Mr. Touche raised the question of payments to civil practitioners appointed examining medical officers. He asked why, since such officers were allowed 40s. a day for a full day's work and lesser amounts for part of a day, there were practitioners in London doing duty from 9.30 to 5 who were still receiving only 24s. a day, being the same rate of pay as that formerly allowed when they were doing only four hours a day. The Financial Secretary to the War Office replied that the rate of 40s. was the maximum, the actual payments depending upon the number of recruits examined. The rate of 24s. was for the period of regular employment and covered whole-time service.

Captains R.A.M.C.—Mr. Joynson-Hicks, on August 7th, asked the Secretary of State for War whether lieutenants in the R.A.M.C. had been given three years' acceleration of promotion after six months' service, but captains of ten years' service had so far been given no acceleration; and whether, having regard to the work done by the R.A.M.C. captains at the front, he would consider the possibility of acceleration of promotion in regard at least to some of them. The Financial Secretary to the War Office said that as a matter of fact 148 captains had received such promotion, and each of them had between ten and twelve years' service. The acceleration of promotion given to lieutenants did not in fact amount to as much as three years; in the majority of cases it had amounted to less than twelve months.

Staffs of Military Hospitals.—In reply to Mr. Kennedy, on August 3rd, Mr. Forster said that the number of hospitals in the London district was 186, of which 158 were auxiliary hospitals. A very large amount of the work performed in military and other hospitals in London and elsewhere was gratuitous. The surgical, medical, and some of the other staffs paid by the War Office were paid monthly in arrear; the remainder were paid weekly. The rates for the nursing staff varied. There was no reason to suppose that the payments were not paid promptly.

Army Medical Equipment (India).—In reply to an inquiry addressed to him by Sir Henry Craik as to committees instituted within the last six years to inquire into the medical equipment and organization of the army in India, Mr. Chamberlain said that in 1912 a committee, of which Surgeon-General Sloggett was chairman, inquired into the system of field medical organization and equipment of medical units of the army in India. Its recommendations were approved by the Government of India and were now in force. The station hospital system for Indian troops was the subject of inquiry by another committee. Its recommendations were under discussion when the war broke out, and as they related solely to peace arrangements their further consideration had been postponed. The reports would be laid before the Special Commission on Mesopotamia if the Commissioners should call for them.

Treatment and Rations of War Prisoners in Great Britain.—In reply to Mr. R. McNeill, on August 3rd, the Financial Secretary to the War Office said that the rations authorized for prisoners of war in this country consisted of 1½ lb. of bread, ½ lb. of meat, ½ lb. of potatoes, together with allowances of tea, coffee, oatmeal, salt, vegetables (including peas), and margarine. It was certainly more generous than that supplied to prisoners of war in Germany. The Army Council welcomed all opportunities for the profitable employment of prisoners of war.

Venereal Diseases.—In reply to Major Astor, on August 7th, Mr. Hayes Fisher said that the regulations and circulars of the Local Government Board as to venereal diseases were only issued about three weeks ago, and no complete schemes had yet been submitted to the Board. Numerous negotiations and conferences had already taken place and considerable activity was being displayed by local authorities.

THE WAR.

THE TREATMENT AND TRAINING OF WOUNDED MEN.

THE TIPPERARY COMMAND DÉPÔT.

In order to ensure the suitable medical treatment of soldiers invalided from the Expeditionary Forces so that they may become fit again as quickly as possible, command dépôts have been instituted at which men are received whose condition may necessitate a stay of any period up to six months, men who cannot be sent to a convalescent camp or dépôt, to which those who ought to be ready for service overseas within a maximum of six weeks of their transfer are sent.

In the case of men who are to remain in a dépôt for such a lengthened period, one of the great factors in getting and keeping them well is the provision of useful and pleasant occupation for the mind as well as means adapted to the repair and building up of the tissues of the body; if at the same time it is possible to prepare these men for useful work in civil life so much the better. Many of them have lost their old occupation or the capacity to carry it on, and they still require something to help out their pensions, and, perhaps equally important, keep them out of mischief not only during the time of their treatment but at the much more dangerous period—the end of the war.

These command dépôts are essentially military organizations, with, however, a larger element than usual of medical supervision. Existing barracks and hutments, well ventilated and slightly modified, are utilized.

THE WORK OF A COMMAND DÉPÔT.

We are indebted to Dr. C. E. Ryan of Tipperary for some particulars of the Irish command dépôt established there under the direction of Lieutenant-Colonel Sims Woodhead, Professor of Pathology in the University of Cambridge.

The fine barracks in Tipperary, with, in addition, hutments for two full battalions, and a large union, provide accommodation for the men of the eight Irish regiments who have returned from the Expeditionary Forces—the Royal Irish Fusiliers, Royal Irish Regiment, Royal Irish Rifles, Royal Inniskilling Fusiliers, Royal Dublin Fusiliers, Royal Munster Fusiliers, Leinster Regiment, and Connaught Rangers—regiments that have earned fame on so many fields. These men, when they arrive at the dépôt, are not yet strong, and many of them require special treatment. They have, however, to carry out most of their regimental duties under company officers who have been wounded alongside them; these officers look after their training, discipline, pay, messing, and the like.

The work of the dépôt will probably be best understood from a short account of the daily routine, it being borne in mind that the men remain for more than six weeks, but are likely to benefit permanently by a six months' residence in the dépôt. The men, most of whom are able to travel and march a moderate distance, though others may have to be conveyed in an ambulance wagon, are sent out from the hospitals or the regimental dépôts by district travelling medical boards. Arrived at the dépôt, all regimental details are collected and recorded by a company sergeant-major. They are allowed to settle down and become accustomed to their surroundings, but within forty-eight hours they are examined, first by the medical officer of the company to which they are assigned, and then by the medical officer in charge, who makes notes, decides treatment, and classifies, according to the amount and nature of duties, the drill and the character of the exercise they appear able to do. Those who require no treatment but rest, graduated physical exercise, and drill, are divided into four classes, 1, 2, 3, and 5, according to the nature and extent of injury and fitness. When special medical or gymnastic treatment is necessary they are put into Class 4, or more frequently into that and another class also, so that a man may be in either 1 and 4, 2 and 4, 3 and 4, or 5 and 4, as the case may be, the special treatment being carried out alongside the performance of the duties and exercises of one of the four other classes.

At first sight this may appear to be a somewhat complicated classification, but in practice it works smoothly and well. Under the commandant the military training of the men is in the hands of a major and company officers, assisted by a gymnastic instructor from Aldershot and a staff of assistant instructors selected from the dépôt and trained by the sergeant-instructor. Each class, 1, 2, 3, and 5, is passed through a systematic graduated course of physical drill and route marching, the men passing from the lowest class, 5, to the highest class, 1, in which are placed all those who are likely to be fit to return to their regiment for general service at the end of a further six weeks' period of training.

The special treatment given in the dépôt may be summed up generally under the headings: Massage, electrical treatment, galvanic, faradic, sinusoidal, and ionization; passive movements, usually combined with the massage and carefully supervised active movements on sliding-seat rowing machines, Foot's pulley exercisers, wrist machines, wall bars, peg poles, stationary cycle, Swedish drill for special groups of muscles, and plinth work, some of which of course is passive. Various kinds of baths—hot, douche, and needle; continuous temperature baths at 93° F., and tepid and cold baths—are also used as occasion may require. This side of the work is supervised by the medical officers, who are assisted by a trained drill sergeant, by one of Madame Osterberg's pupils, and a number of intelligent members of the R.A.M.C.

Many of the men suffer from general debility the result of malnutrition or impaired digestion after gassing, bad teeth, pyorrhoea alveolaris, fixed jaws, resulting from fractured rami, etc.; for these there is a special diet room. One of the men transferred from his regular mess to this diet room put on 11 lb. in ten days.

Some of the men suffer from stiff joints, useless fingers, tender scars, wounds breaking out again, and the like. Such lesions can only be treated by means of small surgical operations, usually done under a local anaesthetic. For the performance of these operations conveniently and safely a small but well equipped surgical room has been fitted up. The results have been most encouraging. A dental surgeon with an extremely well equipped surgery completes the personnel of the dépôt.

It was early found that, especially in the case of classes 3 and 5, time might hang heavy on the hands of the men, and even those who are occupied during some considerable part of the day required evening recreation. To meet this a band, which has contributed greatly to the enjoyment of players and listeners alike, has been formed of wounded bandsmen or of other wounded men with some knowledge of music. Concerts and indoor entertainments have been given, sometimes in the large gymnasium, or again in the Y.M.C.A. huts, of which there are two in the dépôt. Since summer began various outdoor games, cricket, quoits, gymkhana, and boxing competitions have been organized. These, with the regimental institutes, have contributed to brighten the life of the dépôt, officers and men alike taking part in these various recreations.

HANDICRAFT SCHOOLS.

Another side of the life and work of the dépôt, and by no means the least important, is that associated with the system of training in various crafts, in the use of tools and the like. In this work the military and medical authorities have received the cordial co-operation of a committee composed of the chairman and secretary of the Tipperary Technical Instruction Committee, members of other public bodies, and one or two other influential local gentlemen. The Technical Schools Committee made the first step possible by placing their "handicrafts room," along with the instructor in this subject, at the disposal of the committee during such times as they were not used for ordinary classes, with the result that something like forty or fifty men who afterwards may become farm labourers or handymen, have, during the time that they have been training in the dépôt, received instruction in the use of carpenter's tools and methods of carrying out rough, and in some cases even fairly good, carpentry. Some of these men have been discharged not without some skill that will in after-life probably stand them in good stead. In the same school some dozen men have received instruction in cookery, and the authorities have been informed that most of these have proved themselves exceedingly apt pupils.

An effort has been made to train over a hundred damaged men in motor driving and in ordinary "road repair" work,

and in the elementals of the theory and working of internal combustion engines. Many of them cannot become motor car drivers, but they may be able to turn their hand to farm work, where motor engines are coming more and more into use.

A class in French polishing has also been formed, another in the cobbling of shoes, and those who have followed the development of these classes have been astounded at the rapidity with which men have picked up a very considerable knowledge of and facility in these handicrafts. Now that machinery is used so much in the manufacture of shoes the demand for cobblers is very great, much greater than the supply, and from what has been noted of the work done in this dépôt, it is evident that these men will be ready to meet that demand.

Electric bell fitting, telephonic fitting, signalling, shorthand writing and typewriting have also occupied the attention of a certain, but, of course, comparatively small, proportion of the men of the command.

Much of the work of instruction has to be done by skilled teachers, but officers under treatment in the dépôt are playing a very important part in organizing and supervising this branch of the work.

In their spare time the men living in the hutments have developed a taste for gardening, or at any rate have laid out gardens for which company officers have felt justified in giving somewhat liberal prizes.

As the outcome of the work of and the experience gained in the dépôt, the local executive committee have decided to equip and maintain a special institute in which discharged soldiers, who, during their period in the command dépôt have undertaken the class work, and even some who have not, but wish to be specially trained, may attend the classes organized for the men in the dépôt. It is also contemplated that soldiers discharged on account of permanent disability from other dépôts may be received in this institute, which would be under the charge of a time-expired or partially disabled non-commissioned or warrant officer, who would maintain discipline, and whose wife would look after the domestic comfort and culinary arrangements of the institute.

The Organization and Staff.

It is obvious that work of this kind could only be a complete success if the combatant and medical staffs worked in hearty co-operation to bring approved customs and regulations into conformity with a series of entirely new conditions. In the Irish Command Dépôt this co-operation has certainly been achieved, and throughout the two staffs have worked together in perfect harmony, with the result that co-ordination has been excellent, and comparatively little effort has been required to overcome difficulties that might under other conditions have been almost insuperable. With a "scratch" staff made up largely of wounded men, home hospital reserve men, who, of course, were entirely new to the work, a number of masseuses of the Almeric Paget Massage Corps, and officers and medical men taking up duties to which they had not been accustomed, the occasions for friction and irregularity might have been numerous, but every one turned to so heartily and conscientiously that, though there may now and again have been irregularities and lapses from strict regulations, these were so trifling, and in some cases so amusing, that they interfered not at all with the efficiency of the work, and those in authority speak highly of the work done by their subordinates.

A point which is coming home to all who have followed the development of these convalescent dépôts and the course of the cases is that a great need has arisen for surgeons who have devoted themselves to plastic and orthopaedic surgery. Some of them might carry on their work in the dépôts could a small number of beds be set aside in the nearest military hospital for the reception of patients operated upon, and there appears to be little doubt that were such secondary surgical work encouraged not only in these dépôts but in special hospitals, many of the patients would be rendered sound and fit in less than half the time now required for cure, and others who, without such operations, would be crippled for life, might have their condition greatly ameliorated. Even now, were there a number of beds available a travelling surgical and advisory staff, which in certain cases might operate, would be an asset, and, without stereotyping the dépôts or interfering with the individuality of those who are responsible for the working of them, would be able to introduce a certain amount of co-ordination and common action, and be the means of carrying the experience gained at the various dépôts from one to another.

The display of public interest and sympathy in these dépôts has been astounding, and apparently the more they are used to draw in patients who have been discharged from military and regular hospitals and keep them under observation the better will be the results obtained, the less will discipline suffer and the more promising the future history of the patient.

Many of the patients sent into the Irish Command Dépôt when it was first opened were very unsuitable for treatment; some indeed were "hopeless," but latterly much greater attention has been paid to the strict rules for admission laid down by the authorities. In spite of this nearly 10 per cent. (9.7) of all the cases admitted up to date have been returned to their dépôts fit for general service; about 0.9 per cent. for garrison duty abroad, and 20 per cent. for garrison duty at home (of these latter about a third or half will ultimately, probably in two or three months, be fit for general service). About 1 per cent. have been sent out as munition makers, and 12.2 per cent. of the men have been invalided out of the service; about 56 per cent., many of them recent arrivals, remain under treatment in the dépôt.

OTHER PROVISIONS FOR BRITISH SOLDIERS.

When we inquire what is being done for the British soldier who has been disabled in the war, we find that in one department, the strictly medical section of the work, the work is very good up to a point, though it requires extension and greater elasticity in certain directions.

For the man who has lost a limb there is the hospital at Roehampton, where workshops have been established, and the corresponding hospital more recently established near Glasgow, as well as the smaller hospital at Edenhall, near Kelso, and several auxiliary institutions in various parts of Great Britain.

For the man whose disability is of such a nature as to afford reasonable hope that it will be possible for him to be returned to the ranks within a period of six months, there are such command dépôts as that at Tipperary described above, and that at Heaton Park, Manchester.

For the treatment of cases in which surgical orthopaedic treatment is necessary a special military department has been established under an Inspector of Military Orthopaedics (Lieutenant-Colonel Robert Jones). The central institution of this kind in England is the Hammersmith military orthopaedic hospital, established in a fine building at Wormwood Scrubbs, nicknamed the paupers' palace by indignant ratepayers, to whom the hackneyed phrase "they builded better than they knew" may be appropriately applied, for it has proved very adaptable to its present purpose. The neighbourhood, if not fashionable, is open, and the buildings well planned and easily cleaned and ventilated. It has a staff of skilled orthopaedic surgeons, through whose hands a man first passes. They apply such surgical treatment by way of operation or otherwise as may be appropriate, and the man can afterwards be referred to massage and electrical departments in the building. There is a medical man of special experience at the head of both these departments, by whom appropriate special treatment is prescribed, and under whose supervision it is carried out. As in Paris there is a department where a skilled artist makes careful drawings and prepares models. Not only does this system provide graphic records which can be preserved, but a collection is being formed which will be of the utmost value to surgeons, as illustrating the results of operations for various deformities. There are, for instance, some most striking models of deformities of the foot, such as hallux valgus and rigidus and claw-foot, before and after appropriate treatment by operation, splinting, massage, and movement. Other military orthopaedic hospitals are being, or have been, established in various centres in England and Scotland, and there is already a large institution at Croydon where work of this kind is carried on for the Eastern Command.

With regard to the re-education of disabled men who must be discharged from the army—their training, that is

to say, in order to enable them to return to their old trade, or to learn another—the position is as yet undeveloped. As will be seen, a good start has been made at Tipperary, where, with the co-operation of the county Technical Instruction Committee, educational workshops have been set up, and there is a small school at Chailey, but we have nothing to compare with the great school established under the direction of Professor Spitzy at Vienna, as described in the Journal of July 8th last, p. 55.

THE BELGIAN SCHEME FOR DISABLED SOLDIERS.

Hospital and School.

As long ago as November, 1914, the Belgian Government took up the question of the provision which should be made for the treatment and re-education of men discharged from Belgian military hospitals convalescent from their wounds but suffering from various disabling consequences.

The Hôpital Anglo-Belge and its Dependencies.

With the assistance of the Anglo-French Committee of the British Red Cross the Hôpital Anglo-Belge was established at the end of December, 1914, in the buildings of a technical school at Rouen. The hospital started with fifty or sixty beds, but three months later the number at its disposal in Rouen had been increased to about 350, and subsequently subsidiary hospitals were established at Orival, with 275 beds, and Saint Aubin lez Elbeuf, with 325. About the same time a dépôt for discharged soldiers was established at Havre and was gradually transformed into a school for re-education. Finally, in August, 1915, a military institute for re-education was established near Vernon, on the Seine below Rouen.

The hospital at Rouen was placed under the direction of Dr. Armand Deltenre, senior officer of the Belgian Army Medical Service, who has continued in charge of the enlarged organization, and has recently published a pamphlet describing it.[1]

General Considerations.

In this pamphlet, which brings the story down to the end of 1915, he begins by setting out very clearly the problem which had to be solved. The men sent to the Rouen hospital were patients discharged from military hospitals or convalescent dépôts suffering from wounds of the joints, bones, or nerves, but not then fit to rejoin for service. It was at once apparent that the cases fell into two main classes: (1) Those who it might be hoped could be sufficiently restored either to return to the army or to a full earning capacity in civil life. Under this head Dr. Deltenre enumerates cases of partial or total ankylosis, cicatricial contractions, muscular atrophy, lesions of tendons or nerves, and malunited or ununited fractures. (2) Cases in which the disability appeared likely to be permanent and incurable, though the working capacity of many could be considerably improved. He estimates that of all the cases admitted 80 per cent. could be improved to some extent—45 per cent. so much that they would be able to earn a living wage, and 35 per cent. to a degree which would render them able to do some work. This leaves 20 per cent. who, it would seem, were found to be permanently unable to earn anything.

From the first it was determined that the scheme must include a hospital and a school for re-education. The first question was whether these two institutions should or should not be under the same direction. The answer to this question was governed by the consideration that it is very difficult to determine the stage in any case at which hope of any further improvement through the employment of physiotherapeutic means must be abandoned. Experience showed that education in a trade often had a very favourable effect on functional disabilities which had resisted all therapeutic measures. The conclusion, therefore, was that the hospital, with its physiotherapeutic department and the school—since the one was the complement of the other—ought to be close together in the same place. As circumstances prevented the realization of this ideal, Dr. Deltenre had to content himself by keeping both under the same general direction, and providing for the closest possible co-operation.

The Medical Organization.

The strictly medical side of the organization, of which Dr. Deltenre remains directly in charge, consists of two parts: (1) the orthopaedic service, where surgical operations are performed, and artificial limbs or other appliances fitted; and (2) the physiotherapeutic service, which provides mechanotherapy, thermotherapy, radiology and electrotherapy, medical gymnastics and pedagogic gymnastics.

Mechanotherapy.—It was resolved to instal resistance apparatus of the Zander type, and the difficulty of purchasing such apparatus was overcome through the ingenuity of Dr. Waffelaert, a regimental medical officer, who employed the wounded men themselves to make the apparatus necessary both for the upper and lower extremities. A point the importance of which has not always been recognized was early appreciated at Rouen—namely, that the joint above a stump—the hip, for instance, in amputation of the thigh—may be stiff or the seat of arthritis, and that before an artificial limb can be used the joint must be rendered supple, and the muscles of the stump developed as much as possible by massage and exercise; the improvised Zander apparatus were found very useful for the purpose.

Thermotherapy.—This service includes hot air and running water baths and a local hot air douche. The last method is most in use, the hot running water bath being used only when the hot air bath cannot be borne. When the weather permitted, certain wounds were exposed to light out of doors. It was found that direct sunlight was not indispensable.

Radiology and Electrotherapeutics.—In addition to *x*-ray apparatus, the hospital has appliances for galvanism, high frequency, and diathermy.

Medical Gymnastics.—As soon as possible the patient is set to do medical gymnastics on the Ling system under the direction of Swedish experts or persons trained by them locally. As many as 175 patients are exercised every day. The manipulations include massage, which is applied in a very early stage to cases admitted soon after operation. The greatest importance is attached to medical gymnastics, because, to use Dr. Deltenre's rather picturesque phrase, "it appeals to the essential function of the limb—movement."

Pedagogic Gymnastics.—By this term is understood gymnastics in class, usually without apparatus. In addition many of the wounded are employed in the workshops.

Orthopaedic Service.—Treatment by operation had, down to the time of the report, only been carried out on a small scale, but it was intended to develop it quickly in order to deal with suitable cases in the early stage. Much more had been done in the way of making artificial limbs and other appliances. This part of the work had been pushed on because it was considered that in this way the production of vicious attitudes in the limbs could best be prevented. It is urged that cases should be sent to the orthopaedic hospital from the ordinary military hospitals as soon as possible after amputation. Measurements are taken on admission, and while the artificial limb is being made attention is given to the joint, or joints, and the condition of the stump is improved by local baths, by massage, and by suitable spiral bandages applied from above to prevent contraction of the tissues and atrophy of muscles. For the lower limb the Beaufort leg is rejected, and two types have been developed, both of which have joints and are made of wood and leather. Importance is attached to having the patient constantly at hand so that the workman can try on as often as he thinks necessary. With regard to artificial arms, Dr. Deltenre states that so far no limb has been found of real utility for disarticulation of the shoulder. For amputations below the elbow, and above it if the stump is sufficiently long, an arm made of leather is in general use. A rigid hand with a jointed thumb can be attached, but is usually replaced by a hook and ring used alternatively according to the work to be done.

[1] *L'Hôpital Anglo-Belge, Institut de Physiothérapie et d'Orthopédie de l'Armée Belge.* Par le Dr. Armand Deltenre. Printed at the Institut Militaire Belge de Rééducation Professionnelle, Port-Villez, Vernon (Eure), and sold, price Fr. 1.50, for the benefit of the fund for crippled Belgian soldiers.

Dr. Deltenre gives the following statistics of completed cases for the period ending October, 1915:

	Destination.	Percentage.
Cured and discharged to divisional dépôt	1,170	58
Transferred to Vernon School	670	33
Transferred to Havre camp dépôt... ...	180	9
Total discharged	2,020	

This allows for no failures, and we must assume that all those for whose restoration to working efficiency there was little hope were among the patients still under treatment, who numbered 880.

THE DISABLED FRENCH SOLDIER.

WE have from time to time published notes on the work done in France for men maimed or crippled in the war, and have had occasion to explain how, after overcoming many initial difficulties, the medical staff of the French army has established a central organization in Paris for those cases to which the methods of physiotherapy are specially applicable. Its cost to the State is, roughly speaking, nothing, as the building devoted to the work, the Grand Palais, is State property, and the equipment necessary has been provided free of charge by the insurance companies, the chief part of the funds having been supplied by the Syndicat de Garantie du Bâtiment et La Réunion des Assureurs, which recognized the immediate money value gained from the treatment in the reduction of the charges made upon their funds. Professor Jean Camus, who is the head of the service, was able to show[1] that from September, 1915, to February, 1916, the saving effected, based on the reduction of claims for damages, amounted to 18,164,980 francs (roughly, £726,000). The cases treated in the period numbered 3,348; of these, 2,676 (80 per cent.) were able to return to active service, 457 were drafted into the auxiliary services, and only 215 (7 per cent.) were finally rejected as unfit for military service. The improvements obtained, looked at from the point of view of function measured on arrival at the hospital and before discharge, showed that an average mean gain in function of 30 per cent. had been achieved.

To-day the Grand Palais is one vast military hospital, and the central unit of physical treatment in France. Sentries are at the doors, and strict military discipline prevails. The vast arena has been cut into two parts, the one half being used as a hospital and the other as a training school and gymnasium.

Appropriate treatment is assigned for each man, and he must every day present a card to each of those responsible for carrying it out, to be marked as a proof that he has duly attended. The cards are controlled at a central office, and the simple measure of allowing men conditionally the liberty of Paris has been found sufficient to ensure their rigid obedience to the rules. The importance of this is shown by the fact that, before the system was organized, out of 5,571 men for whom physiotherapeutic treatment was ordered, 1,000 never followed it at all, and 1,200 followed it irregularly, without deriving the benefit that might have been expected. Each man is medically examined on admission, and a note taken of his condition and the extent of available movement in the injured parts.

The rooms devoted to mechanotherapy present the appearance of a large factory workshop with rows of apparatus designed to reproduce the various movements of the limbs, with the result that there is a suitable apparatus to meet the needs of every case. Another department provides various forms of thermotherapy, including hot-air baths, and another electrotherapy, where opinions as to the value of static electricity for the relief of pain and of the irregularly varying current for stimulation have been confirmed. The hydrotherapeutic department has developed chiefly along the lines of treatment by hot water and the degree of movement of water. In the massage department, as in all others, treatment is given under immediate medical control by a large staff of trained masseurs. There is a special gymnasium equipped with the apparatus necessary for the treatment of injuries. Two well-known French sculptors have given their services partly to prepare accurate models with a view of placing on permanent record the more remarkable injuries that have occurred through wounds received in war, and partly to provide the special apparatus necessary to give relief.

As regards the actual treatment given in the Grand Palais, there is no novelty, except in details; but those responsible for its organization have devised an institution that has grouped and correlated a whole class of treatments on a scale that has hitherto not been attempted. It started as an institute for massage, and has grown rapidly by the addition of the other departments mentioned.

Further, the work done at the Grand Palais is advancing knowledge. Special apparatus has been designed, making it a simple matter to analyse not only the degree of movement possessed by the patient, but also his power of movement. A graphic record enables force and fatigue to be read off at a glance, with the incidentally useful result that the detection of malingerers becomes a matter of great simplicity.

For the minority who have definitely to be drafted out of the service further special arrangements have been made. A department of the Grand Palais has been reserved for their use, where they are taught special trades and occupations for which their injuries do not incapacitate them, after the manner of the Bordeaux scheme, described in our columns (June 10th, 1916, p. 825). A society with its head quarters in Paris (L'oeuvre de l'Assistance aux mutilés pauvres) helps a man, when his training is finished, to set up in his native place or elsewhere by advancing him money to buy tools and materials.

[1] *Archives de médecine et de pharmacie militaires*, March, 1916.

THE BRITISH ARMY MEDICAL SERVICE IN FRANCE.

READJUSTMENTS AND EXTENSIONS.

THE effect produced on the medical arrangements by the extension of the British front has been relatively small. Holding an additional length of trenches of course means the employment in the firing line of an additional number of men, and this in its turn must mean an addition to the length of the weekly casualty list, even though nothing beyond ordinary trench fighting may be in progress. The base hospitals have, however, long been far too well organized for any such additions to make any difficulty for their work.

On the other hand, seeing that with an extended line the casualties are distributed over a wider area, a need arises for the establishment of fresh casualty clearing stations. But such casualty clearing stations had already been quietly mobilized in advance, and the only step required was to find sites for them and to move them up. This was promptly done, though the selection and arrangement of the sites must have given a good deal of trouble.

It also might have been expected on the face of matters that so considerable an extension of the line as that which took place would have involved some material modification of the previously existing organization for getting back the sick and wounded from front line formations to the various base hospitals.

But this was not the case. Many months ago the medical authorities established a southern line of evacuation to supplement the old northern route, and to make this southern line meet all the needs of the new situation nothing was required beyond the creation and linking up of one or two sub-lines.

Furthermore, the medical authorities had been equally long sighted in the matter of rolling stock—that is to say, of hospital trains, and also of canal ambulance barges.

Consequently, when the call came they were not disturbed. It is quite likely, indeed, that 75 per cent. of medical officers in France would, until they saw it stated in the papers, have remained unaware that a new army had been formed and a fresh length of front occupied but for the circumstances that from time to time various well-known officers disappeared from their accustomed posts.

A large proportion, in fact, of the more important administrative and other positions in the army holding the extended line of front, are held by men who made their mark in the old or northern section of the existing line.

They have brought with them long experience of the special medical needs created by trench warfare and of the ways in which men engaged in more or less siege-like operations can be kept in good health. Hence there is very little dissimilarity in the medical arrangements from one end of the line to the other, and everywhere at the front the position is satisfactory.

The same statement can be made with equal truth of the conditions on the lines of communication. Every reasonable provision has everywhere been made, and the whole organization works smoothly. Consequently, if and when the great push comes, the medical department will certainly justify all reasonable expectation.

Nevertheless, no one who has studied the possibilities of this war with care can feel absolute assurance that there will never be any delay in the evacuation of the sick and wounded nor shortage in the matter of hospital accommodation. With the weapons that are now employed it is always possible for an evacuation line to be rendered impassable for many hours, and for the casualties to number tens of thousands for many days in succession.

Coincident with the extension of the British line but not consequent thereon have been sundry developments or refinements on the side of medical administration. One of the more important of these affects the base hospitals. In the permanent military hospitals at home there is a considerable amount of delegation of authority. In particular the commanding officer, though he remains responsible for everything done in his hospital, has amongst other assistants two senior officers, who, under the title of officers of divisions, are in direct charge of its medical and surgical wards respectively, and exercise administrative authority over the other officers employed therein in clinical work.

A like decentralization in the hospitals that came into existence on mobilization was anticipated by the regulations regarding war establishments, but in the base hospitals in France the appointments in question were at first only exceptionally made. Other calls being numerous, there was some paucity of officers of sufficient military experience to fill these posts, and the need for filling them at all was partly eliminated by the supervisory authority granted to surgical specialists.

Recently, however, it has been thought well to put this part of the plan into full operation. The base hospitals as a whole have grown very large—the general hospitals have commonly over 1,000 beds, and the stationary hospitals over 500—and their staffs are relatively small; to secure satisfactory results, therefore, the details of all work must be very carefully organized. Furthermore, as time goes on, circumstances tend to make changes in the personnel more frequent, and many of the new arrivals have had no previous experience of base hospital work. Consequently it is very useful to have at hand officers who besides doing more or less clinical work themselves are capable of taking complete control of ward units and instructing new arrivals in their duties. A good many of the officers of divisions are temporary or Territorial officers who have been out in France for a long time and have in one way or another gained the necessary knowledge and experience.

Another development affects the field armies. Under a recent order every D.M.S. of an army has an expert in sanitation attached to his staff. The army rank of such officer differs in each individual case, and no doubt their precise duties depend very much on the views of the D.M.S. concerned. But the general idea appears to be to provide the D.M.S. with an officer who can collate for him all information, bearing on sanitation and preventive medicine, received at Army Head Quarters from the senior medical officers of corps and divisions, and can also, under his authority, conduct correspondence thereon, when required, with General Head Quarters.

The direct responsibility for supervising the sanitation of the army lies primarily in the hands of battalion medical officers; next in those of the officers of sanitary sections (these in some cases are known as divisional sanitary officers); then in those of A.D.M.S. of divisions and the D.D.M.S. of corps. There are also the officers in charge of the mobile laboratories allotted to each army. The areas they serve are often coterminous with those of corps, but they do not move with corps, and the part they play in sanitation is not always identical. Sometimes they act merely as sources of information on given points, sometimes they take a direct part in the settlement of sanitary questions.

In a general way each army acts in regard to sanitation and preventive medicine as if it were an independent unit, but in respect of principle their work is closely correlated by two officers attached nominally to the staff of the Inspector-General of the Lines of Communication, but really forming part of the staff of General Head Quarters. One of them is an expert in pathology and the other an expert in hygiene. They advise the Director-General on all questions of preventive medicine, affecting any particular army or the Expeditionary Force as a whole, or on which he may have to give a decision. The practical and theoretical knowledge of sanitation possessed by most officers of the R.A.M.C. is more extensive than that of the great majority of their civilian colleagues, and the importance attached to this subject never ceases to grow. Nevertheless, comparatively few of them seem to wish to specialize in this subject. One reason, perhaps, is that the extra allowance made to a specialist in sanitation is no greater than to specialists of half a dozen other subjects, while the calls made upon his time and energies are pretty certain to be larger and more constant. Furthermore, it is not at present a speciality which, if practised with success, necessarily paves the way to the highest positions in the Army Medical Service.

It should be noted in conclusion that the appointments mentioned are not entirely a new departure, for the D.M.S. of the original army had a sanitary expert on his staff, and the senior medical officer of practically every hospital base has always enjoyed assistance of the same order.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Killed in Action.

CAPTAIN JOHN LESLIE GREEN, R.A.M.C.(T.F.), was reported as "missing, believed killed," in the casualty list published on July 11th (BRITISH MEDICAL JOURNAL, July 15th). The announcement below shows that he was killed. He was educated at Cambridge and at St. Bartholomew's, and became M.R.C.S. and L.R.C.P.Lond. in 1913. He subsequently served as resident medical officer of the Huntingdon County Hospital and as a ship surgeon on the Elder Dempster line of steamers. He joined the 5th Territorial Battalion of the South Staffordshire Regiment as lieutenant and medical officer on September 28th, 1914, and was promoted to captain a year later.

The supplement to the *London Gazette* issued on August 5th announces that the King has conferred the Victoria Cross upon Captain Green for most conspicuous devotion to duty. Although himself wounded he went to the assistance of an officer who had been wounded and was hung up on the enemy's wire entanglements, and succeeded in dragging him to a shell hole, where he dressed his wounds, notwithstanding that bombs and rifle grenades were thrown at him the whole time. Captain Green then endeavoured to bring the wounded officer into safe cover, and had nearly succeeded in doing so when he was himself killed.

Lieutenant B. R. Roberts, R.A.M.C. (temporary).

Died on Service.

Captain Herbert Rennie Robertson, R.A.M.C., attached Essex Yeomanry, died in London, after an operation, on July 29th. He was educated at Trinity College, Dublin, where he took the degrees of M.B., B.Ch., B.A.O., and M.D. in 1895; and prior to the war was in practice at Tientsin, North China.

Wounded.

Captain H. G. Bruce, R.A.M.C. (T.F.)
Captain W. S. Garden, R.A.M.C. (temporary).
Captain E. H. Griffin, R.A.M.C. (temporary).
Captain A. C. Hancock, R.A.M.C. (temporary).
Captain A. Hines, R.A.M.C. (temporary).
Captain O. H. Peters, R.A.M.C. (T.F).
Captain M. Scott, R.A.M.C. (temporary).
Captain J. P. Walsh, Canadian A.M.C.
Captain J. R. N. Warburton, R.A.M.C. (S.R.).
Lieutenant W. E. H. Beard, R.A.M.C. (temporary).
Lieutenant H. G. Gibson, R.A.M.C. (temporary).

Missing, believed Killed.

Captain J. H. Beilby, R.A.M.C.(T.F.), Yeomanry.

Deaths among Sons of Medical Men.

Alexander, Philip Mansell, Second Lieutenant Gordon Highlanders, eldest son of Dr. S. P. Alexander, of Southsea, died of wounds on July 30th.

Binns, Raymond Lewis, Second Lieutenant Princess of Wales's Own Yorkshire Regiment, son of the late William Binns, M.D., of East Bergholt, Suffolk, killed July 10th. His commission was dated April 22nd, 1915.

Cheese, Ernest Velmont, Lieutenant Army Pay Department, younger son of the late Dr. James Cheese, died of pneumonia at No. 2 Red Cross Hospital, Rouen, on July 30th. He got his commission in September, 1915.

Crombie, Ian Osborne, Captain Middlesex Regiment, second son of Dr. Crombie, of Sidcup, Kent, killed on July 30th, aged 21. He was educated at Merton Court, Sidcup; at St. Paul's School; and at Wadham College, Oxford, where he had been in residence for a year when the war began, having gained scholarships both at St. Paul's and at Oxford. He got his first commission from the Oxford O.T.C., became lieutenant on January 28th, 1915, and captain in December. In May, 1915, he went to the front, was wounded on August 24th, rejoined in February, and went through the crater fighting in the Hohenzollern Redoubt last March.

Dickey, Stanley, Sergeant Canadian Mounted Rifles, son of Dr. Dickey, late of Antrim Road, Belfast, now of Saskatchewan, Canada, killed in July while endeavouring to extricate some men buried in a blown-up trench. He was at one time on the staff of the *Belfast Evening Telegraph*, but enlisted in Canada.

Ferguson, A. L. H., Lieutenant Gordon Highlanders, second son of the late Major Ferguson, I.M.S., killed on July 23rd. He was educated at Aberdeen Grammar School and at Epsom College, enlisted in September, 1914, got a commission in October, and became lieutenant on March 5th, 1915. He was wounded, losing an eye, in November, 1915, and wounded a second time in March, 1916.

Hatch, Laurence Collier, Lieutenant Durham Light Infantry, second son of Dr. F. H. Hatch, of Copse Hill, Wimbledon, reported "missing, believed wounded," on September 25th–27th, 1915, now presumed killed, aged 21. He was born in South Africa, educated at Oundle School and at Pembroke College, Cambridge, and got his commission on September 14th, 1914. He went to the front on September 18th, 1915, and was killed at Loos a week later.

Holland, Archibald Close, Lieutenant Bedfordshire Regiment, youngest son of Dr. Holland, of St. Moritz, Switzerland, killed July 27th. He got his first commission on May 18th, 1915.

Jameson, Alan Battersby, Second Lieutenant Cambridgeshire Regiment, son of the late Major Granville Jameson, I.M.S., killed July 21st, aged 22. He was educated at Denstone and at Sidney Sussex College, Cambridge, where he was studying for the Church before he joined the army. He went to the front last February.

Latimer, Hugh, Lieutenant Queen's Own Royal West Kent Regiment, only child of Dr. H. A. Latimer, of Trengweath, Molyneux Park, Tunbridge Wells, killed July 3rd, aged 19. He was educated at Llanyre Hall, Llandrindod Wells, and at Rugby, which he left in December, 1914, having gained an open scholarship at Brasenose College, Oxford, which, however, he was not able to take up, having got a commission from December 30th, 1914.

McSwiny, Claude O'Connell, Second Lieutenant King's Shropshire Light Infantry, younger son of Fleet Surgeon McSwiny, R.N.(ret.), of Brandize Park, Okehampton, Devon, killed July 14th, aged 19. His commission was dated May 22nd, 1915.

Moir, Douglas Dana Drew Kinnaird, Second Lieutenant Yorkshire Regiment, second son of Major F. Drew Moir, R.A.M.C., of Pembridge Villas, London, W., killed on July 23rd, while leading his men in the attack on the German line. He was born at Halifax, Nova Scotia, on December 12th, 1894, educated at Plymouth College, and on November 4th, 1914, received a temporary commission in the 10th Battalion of the Norfolk Regiment. Thence he passed into Sandhurst, and while there played for the Rugby fifteen. On December 21st, 1915, he was gazetted to the Yorkshire Regiment. He was the grandson of the late Captain H. Kinnaird Alloway, of the Royal Monmouthshire Light Infantry.

O'Connor, Arthur Cathal, Captain Norfolk Regiment, only son of Colonel A. P. O'Connor, C.B., Army Medical Staff, killed on July 25th, aged 24. He was educated at Wellington and at Trinity College, Cambridge, and represented both his school and his college at gymnastics. He joined the army in 1913, became lieutenant on August 19th, 1914, and captain in May, 1915. He was wounded in the battle of the Aisne, and received the Military Cross on June 3rd, 1916.

Power, Reginald Colin, Private Royal Fusiliers, only son of Dr. Power, of Atherstone, Warwickshire, killed July 16th, aged 25.

Young, Frank Irvin, Second Lieutenant Brigade Staff, 1st Battalion Northumberland Fusiliers, sixth son of Dr. Ralph Young, Royton, Lancs. He was a dentist, L.D.S.Glas., and had previously served in the Army Service Corps during the Boer war. He was killed by shell whilst bravely extinguishing burning stores and ammunition on July 24th.

NOTES.

Honours.

The *London Gazette* of August 3rd publishes dispatches from Sir G. Smith, Governor of the Nyasaland Protectorate, and Colonel G. M. P. Hawthorn, officer in command of the troops in the military operations in Nyasaland from October, 1914, to October, 1915. Among the officers specially mentioned in these dispatches is Dr. (temporary Captain) Norman MacLean Leys, of the Colonial Medical Service, British Central Africa.

Medical Officers Wanted.

Scottish Women's Hospitals for Foreign Service.

Applications are invited from fully qualified medical women for posts in connexion with the Scottish Women's Hospitals. All members of the medical staff now receive an honorarium at the rate of £200 per annum, with uniform, travelling expenses, board, and laundry.

Scotland.

A travelling exhibition of maternity and child welfare work, food values, thrift, and home nursing has paid its first visit to Keith, Banffshire, where it was opened by Dr. Leslie Mackenzie, medical member of the Local Government Board for Scotland, on August 7th. After two days at Keith it goes on to other towns and villages in the county and afterwards moves through other counties in the north of Scotland.

Home for Helpless Soldiers.

The Ralston Hospital, at Paisley, equipped by Sir Charles Cayzer and given to the Scottish branch of the British Red Cross Society for the reception of paralysed soldiers and sailors domiciled in Scotland, was opened by the Duchess of Montrose on August 2nd. Sir George Beatson presided. The Duchess of Montrose said that the Scottish patients in the Star and Garter Home at Richmond were homesick, and Sir Charles Cayzer had not only offered his beautiful residence for the purpose of a Scottish home but he had equipped it with everything needed that could contribute to the comfort of the patients. They would need skilled and special nursing for a long time, but it was hoped that surgical science might do much to enable many of them to regain the powers they had lost. The gift of the hospital was formally accepted by Surgeon-General Culling on behalf of the War Office, and Sir George Beatson in thanking Sir Charles Cayzer said that from the start he had spared no effort to make the home as fine as possible for the purpose. The Scottish Red Cross Executive has undertaken the responsibility for the maintenance of the home and appeals to the Scottish people to provide the funds.

Edinburgh Hospital for Incurables.

At the annual meeting of the Royal Hospital for Incurables, presided over by Dr. A. G. Miller, it was stated that the number of patients under treatment in the Longmore Hospital and the Liberton Cottage Hospital during the year ending March, 1916, was 346, of whom 115 had been admitted during the year; 142 had died, left, or been discharged, leaving 204 in hospital. The institutions are for the palliative treatment of disease presumably incurable, but calling for continuous medical supervision and skilled nursing. The Chairman appealed for increased funds for the maintenance of the institutions, for the provision of additional accommodation mainly for cancer cases, and for the remodelling of the accommodation of the nursing staff at the Longmore Hospital. He mentioned that two former patients were now serving in the army at the front.

Scottish University Ordinance.

The present position with regard to the ordinance of the Scottish university courts relating to entrance examinations seems to be that it is now lying on the table of the House of Commons, but that there is a difference of opinion as to the advisability of putting it into force, at any rate at the present time. The Glasgow Council has declared itself in favour of delay, objecting particularly to the proposed substitution of a permanent entrance board for the joint board. The committee of the Edinburgh University General Council, on the other hand, has put out a memorandum deprecating any action by either House of Parliament which would interfere with or delay approval of the ordinance by His Majesty in Council, believing that none of the objections raised have sufficient weight to justify the postponement of a valuable and carefully considered reform in university methods. It has also pointed out that the university courts would retain unimpaired their capacity

to meet requirements in the future by suitable new ordinances as occasion arose. Mr. Tennant made his first appearance as Secretary for Scotland by answering questions on the subject set down by Mr. Eugene Wason and Sir G. Younger, who wanted to know whether, in view of the difficulties of the present time and the possibilities of the future, he would arrange to withdraw the ordinance until the changes the war would necessitate had been better realized. Mr. Tennant said that the question of withdrawing the ordinance was one for the consideration of the university bodies which had proposed it, but he had no doubt that the risks adduced in the question would be duly taken into consideration by the Privy Council when it came to deal with the question in virtue of its powers under Section 21 of the Universities (Scotland) Act, 1889.

Ireland.

THE HOLIDAYS OF POOR LAW MEDICAL OFFICERS.

AT a recent meeting of the Magherafelt Board of Guardians Dr. Hegarty applied for his annual holidays and nominated Dr. M. Hunter as his locumtenent. Dr. Hunter wrote to the Board that in view of the increased cost of living he considered £2 2s. for the dispensary and £1 1s. a week for the workhouse insufficient remuneration, and suggested a combined sum of £6 6s. a week for both as reasonable, but if the guardians thought it excessive he was prepared to accept £5 5s. for discharging the temporary duties of both workhouse and dispensary. A member of the board stated that he had an interview a few days previously with Dr. Kerlin, who was prepared to discharge the duties of both dispensary and workhouse for £3 3s. a week, and after some discussion Dr. Kerlin was appointed to discharge the duties at the dispensary and workhouse at that rate.

It is now many years since the Treasury made a special grant towards the holiday expenses of Irish Poor Law medical officers, and the Local Government Board (Ireland), in its regulations for the government of dispensary districts, states that each medical officer shall be allowed an annual vacation, not exceeding four weeks, and that the guardians shall pay to the locumtenent appointed such reasonable remuneration for his services as the Local Government Board shall approve or direct. The order also says that the medical officer shall not relinquish the discharge of his duties until he submits an application to the guardians nominating a duly qualified medical practitioner who undertakes to perform the duties of temporary medical officer at a rate of remuneration to be stated, and until the Local Government Board express its approval of the arrangement made. As might be expected, this order, from its want of definiteness, has been the cause of much unseemly wrangling at boards of guardians when considering applications for leave of absence from their medical officers. The Local Government Board, however, in correspondence with boards of guardians in connexion with the interpretation of this rule, made it plain that when the Treasury made a special grant towards the expense of Poor Law medical officers' holidays the understanding was that they should get annually, if required, up to one month's holidays and that the minimum remuneration should be £4 4s. for dispensary districts and £3 3s. a week for workhouses. The Local Government Board also urges that the locumtenent nominated by the doctor going on holidays should be appointed by the guardians where the arrangements made are satisfactory as regards the convenience of the sick poor. While it is true the majority of the boards of guardians act in accordance with the spirit of the regulation, yet there is a very considerable minority that avail themselves of the opportunity, afforded by the fact that the Local Government Board regulation is not mandatory, to cut down the length of the holidays and the customary remuneration as well as to refuse to appoint the substitute nominated by the doctor asking for leave.

At the last meeting of the Irish Committee of the British Medical Association a strongly-worded resolution was passed urging the Local Government Board to remedy the defects of its regulation governing holidays so that it would be mandatory on all boards of guardians to give to Poor Law medical officers, where requested, one month's holiday and to appoint, with adequate remuneration, the locumtenent nominated by the doctor going on leave. It would be impossible for even a small minority of boards of guardians to impose objectionable holiday conditions on the Poor Law medical officers if certain doctors, fortunately a very small number, would only observe the ethical rule sanctioned by all medical bodies in Ireland that no doctor should apply to act as locumtenent for another while on holiday or sick leave without the invitation or consent of the doctor going on leave, or accept less than the customary remuneration.

SPHAGNUM MOSS DRESSINGS IN IRELAND.

When the Irish War Hospitals Supply Dépôt, 40, Merrion Square, Dublin, started its work in November, 1915, the entire control of sphagnum moss was handed over to the Royal College of Science Detachment of the St. John Ambulance Brigade, and since then it has controlled the sub-dépôts throughout Ireland.

Helped and encouraged by Colonel Cathcart's advice the work was started in December, 1915, and although some difficulty was at first experienced in getting the proper moss, it was soon overcome by sending correct samples to collectors, and there is now an excellent supply of moss, that coming from Galway, Mayo, and the King's County being particularly good. A Committee of the Royal College of Science Women's Division manages the dépôt, and most excellent workrooms have been granted by the Department of Agriculture. There are now 25 sub-dépôts, and though some have only been working for a very short time, yet during the seven months the work has been carried on 58,957 sphagnum dressings, 325 dysentery pads, and 1,435 elbow and garden cushions have been turned out.

The elbow and garden cushions are made from indifferent samples of moss, and the boxes in which the dressings are dispatched are made by the men of the Royal College of Science Division.

The requests for dressings are now so numerous—eighty different hospitals have been supplied in England, Ireland, France, Belgium, Egypt, and Greece—that it has been found difficult to make the supply equal the demand, which has grown so rapidly that a special effort has recently been made, with the result that over 20,000 dressings were provided in June, while the output for the first half of July was over 16,000. The War Office has requisitioned 5,000 sublimated dressings each month, and this branch of the work is carried out by the courtesy of Messrs. Fannin at their premises in Dublin.

In connexion with the question of sphagnum moss dressings the following quotation from Joyce's *Child's History of Ireland* is of interest:

> In the year 1014, when marching home after the Battle of Clontarf, the Dalcassians were attacked by an old enemy, M'Gilla Patrick, a prince of Ossery. Their chief gave orders to place the wounded in safety in the rear, but they insisted on taking part in the fight. "Let stakes from the neighbouring wood be fixed in the ground," said they, "and let us be tied to them for support, with swords in our hands, having our wounds bound up with moss, and let two unwounded men stand by each of us, on the right and on the left. Thus will we fight and our companions will fight better for seeing us." It was done so, and when the Ossorians saw this they were struck with fear and pity and refused point blank to fight with such resolute and desperate men.

It would appear from this that moss was a recognized surgical dressing in Ireland in 1014.

England and Wales.

LANCASHIRE COUNTY HEALTH REPORT.

THE report of the M.O.H. for the county of Lancashire for the quarter ending June 30th shows a death-rate of 12.2 per 1,000 as compared with 13.2 for the same quarter last year. With the exception of small-pox, all the principal epidemic diseases showed a decrease in incidence and deaths. Scarlet fever had declined from 1,803 cases with 23 deaths in the March quarter to 1,347 cases with 20 deaths. Measles and German measles caused 111 deaths as compared with 343 in the corresponding quarter last year. Cases of small-pox had been notified from seven districts of the county; the number of persons attacked was 28 and 3 deaths occurred; the last case was notified on May 29th. In the previous quarter there were 14 cases

with 2 deaths; all the cases were removed to isolation hospitals.

The report of work under the Midwives Act shows 924 midwives on the roll, of whom only 702 were in practice; the large proportion of 483 were only on the roll by virtue of having been in *bona-fide* practice in 1901. The help of doctors was called for in 644 cases, and 107 still-births were recorded. The cases of puerperal fever which came to the notice of the M.O.H. numbered 22, of which 7 were fatal; of the total, 10 had been attended only by medical practitioners without midwives. In 3 cases of puerperal fever there were charges of negligence on the part of midwives, the offence in 2 consisting of delay in sending for medical help, and in 1 of failing to send for medical help altogether. During the quarter 73 cases of ophthalmia neonatorum were reported, and investigation revealed 18 instances of negligence on the part of the midwives, chiefly failure to send for medical help. As a result of representations to the County Education Committee in regard to a possible shortage of midwives, the number of scholarships to be offered for competition in 1917 has been increased from two to four. The scholarships are of the value of £30, and are offered to women between the ages of 23 and 40 to enable them to obtain a training in midwifery.

Correspondence.

PROPOSED MIDWIVES ACT FOR IRELAND.

SIR,—I should be much obliged to you for the insertion of the subjoined letter, which I have forwarded to Dr. L. Kidd in reply to a letter he addressed to me, a copy of which appeared in the JOURNAL of August 5th:

Ardfinnan,
August 3rd, 1916.

Dear Dr. Kidd,

You neither claimed privacy nor privilege for your circular, therefore I cannot see how it could be "improper" for any member of your committee to bring to my notice—considering my position as vice-chairman of the Poor Law Subcommittee of the I.M.C.—any proposals affecting the class interests of the body which it represents. I invite you to deal categorically with my letter of the 19th ult. apart from all personality. I informed you in a previous letter—received by you before your public denunciation—that that was my intention in dealing with this matter. Promises, advice, denunciation, unsustained *ipse dixit* and assertions, are to me "trifles light as air" when dealing with matters concerning our profession. If you are in a position to declare publicly the decision of your committee to abandon the *penal* amendments to which I referred as applying to dispensary medical officers, and to accept my demand for their exemption from the necessity of becoming the unpaid attendants of every handywoman in their locality while she exercises "habitually and for gain" her execrable traffic in the lives of parturient mothers and their children, you will do much towards the possibility of your projected bill becoming law. Your committee will be expected to show explicitly how it proposes to effect this object, and if I am satisfied on the point my opposition shall be withdrawn. In conclusion I will say that I would have advised opposition to the appointment of your committee if I thought its proceedings were to be conducted at any stage *in camera*.

Yours faithfully,
J. POWER.

In reply to Sir F. H. Champneys's letter, permit me to say the trouble is that I have as an Irish practitioner grasped the difficulties and drawbacks of the proposed Midwives Act for Ireland which he apparently has not, and his lack of knowledge in this respect is very likely due to the fact that he is an Englishman practising in London. The Medical Charities Acts in Ireland provide fully trained midwives whose services are given free of cost not only to the destitute but to working class people who would have to pay out of their pockets for such services in England. In the circumstances, the Midwives Act which is necessary in Ireland is one that would compel parturient women to avail themselves of the services of those trained women. From my reading of the Scottish Act it appears to me that all the *reputable* handywomen at present, and for some years to come, plying their septic trade can get on the Midwives' Roll, and thus impose on an unsuspecting public as certified and trained nurses, with the direst consequences to their victims. Now I ask, What is the necessity, even for a month, for creating such a state of affairs in Ireland where there are enough trained midwives, if only their services were availed of, to attend all parturient women? I should like to know from Sir F. Champneys what is the difference between an untrained woman, apart from her legal status, registered on the Midwives' Roll and the woman who will, unknown to the doctor, practise in mostly all cases as a midwife in the guise of what he describes as a *monthly nurse*. If Sir F. H. Champneys knew anything about the conditions of practice in Ireland he would at once realize the impossibility, from want of sufficient time, of a registered medical practitioner supervising or trying to undo the mischievous work of the infection-bearing untrained "monthly nurse." Dr. Kidd's statistics quoted by Sir F. H. Champneys are interesting, but they ignore the bearing of the filthy insanitary dwellings of our urban population, which, in Ireland and other parts of the empire, are nothing short of being disgraceful to the State which permits such a condition of affairs.—I am, etc.,

Ardfinnan, Aug. 5th. J. POWER.

SIR,—I have been greatly interested to read the statistics dealing with maternal death-rate before and after the passing of the Midwives Act (1902) quoted by Sir F. Champneys in his reply to Dr. Power. I have long been hoping to see some such information, but candidly I cannot profess that the figures are such as to afford the supporters of that measure much satisfaction.

It is true that Table I shows a large falling off in the mortality from puerperal fever, and no doubt we must all feel thankful that so much at least has been achieved. But surely a death-rate from this cause of 1.39 per 1,000 is nothing to boast about. If my memory serves me aright, nothing exceeding 0.5 per 1,000 ought to satisfy the authorities.

It is, however, when we come to study Table II (accidents and diseases of pregnancy) that the failure of the Act becomes most apparent.

Here we have an actual increase of 0.39 per 1,000 in the period 1911–1914, as compared with the first period quoted, 1881–1890; and though there is an absolute decrease in the figures given under Table III (all causes) when we compare the same two periods, it is somewhat disturbing to find that in the last period (1911–1914) there is a slight increase of deaths (3.86, as compared with 3.75 in the previous period, 1903–1910).

I think on these figures Dr. Power has substantial ground for contesting the extension of the Act, or an Act on similar lines, to Ireland.—I am, etc.,

A. C. E. PARR, B.A., M.R.C.S., L.S.A.

Feltham, Aug. 8th.

JUNG'S PAPERS ON ANALYTICAL PSYCHOLOGY.

SIR,—As your reviewer states, Dr. Jung formerly used hypnotism, and thus gained intimate acquaintance with unconscious phenomena and practical experience of the limitations of hypnotism. It was, however, from the standpoint of experimental psychology that Jung came to an independent understanding of Freud's views. Through the work done in his *Diagnostic Association Studies* (1903) he found that the mechanisms of the unconscious described by Freud in his *Psychopathology of Everyday Life* were "complex indicators." From the beginning, however, there was a difference in the interpretation of the facts (see preface to *Psychology of Dementia Praecox*). Only those who are familiar with the writings of both schools can realize how deep the cleavage now is. It rests primarily on the meaning of the symbolic language of the dream. Jung lays stress on its analogy with primitive thinking, as seen in myth, folk-lore, and the symbolism of early religions, and regards it not merely from its causal standpoint, which is fully accepted as half the truth, but sees in it "an attempt to comprehend and point out the further psychological development of the individual, thus a prospective import is added to the retrospective value of the symbol."

It is difficult to believe your reviewer has read the article on the psychology of *so-called* occult phenomena.

The italics should carry conviction of the author's view. The case of mediumship is presented in the usual detached scientific manner, and the pre-existing facts of her psychology, and the gradual evolution of her so-called occult qualities carefully set forth. Her growing wilful deception, and the subjective nature of the somnambulic personalities is pointed out, and the meaning of such manifestations for the good or ill of the future personality. The medium creates her phenomena out of the unconscious, just as the dream constructs its images; certain aims of the personality are thus expressed, but the phenomena have no intrinsic value.

In criticizing the association test the reviewer is under a total misapprehension of the facts; thus the "naïveté" credited to Jung must, I think, be referred to himself. Three persons were implicated in a theft: circumstantial evidence and the author's suspicions pointed to B.; the experiment, however, cast the suspicion on A.; hence, as the author says, "one may assume the probability of this person's guilt." A.'s subsequent confession confirmed not the analyst's suspicions, but those of the test itself.

The view is controverted that when a marriage is crippled by a wife's neurosis "the cause of the unhappiness always lies in a too firm attachment to the parents." The statement is made that "no proof is given of this assertion." The reader must seek his proofs in the unconscious itself. It always looks as if an unhappy fate produced the neurosis; only on painstaking analysis does one discover that the unacknowledged and unknown "fixation to the parents" drives the victim subconsciously to the *milieu* which is her undoing.

In the remarks on "number dreams" the reviewer again shows misapprehension. The implication is that the analyst adds and manipulates numbers in such a way that they come out as they do. This is not so; numbers and associations are supplied solely by the patient, and come from the unconscious; when once tabulated it looks as if they must have been in consciousness all the time; but "consciousness is that of which we are aware at a given moment," the ultimate result was unknown till it was worked out consciously.

That misunderstanding should arise is not surprising. The laws of the unconscious are quite other than those which govern consciousness; but they are *laws*, and must be admitted as such if we would extend our knowledge of them.—I am, etc.,

London, W. CONSTANCE E. LONG.

THE SOLDIER'S HEART.

SIR,—The more Mr. Turner wriggles the more deeply he gets into the mire. Let us analyse a few of his sentences: "His method of excluding from a share in the causation of 'soldier's heart' that part of bacterial action which might be due to dental sepsis." There is here an assumption that the "soldier's heart" is due to bacterial action, and that a part of such action *might be due* to dental sepsis. He offers no evidence, no proof, not even a reasonable hypothesis of such a contention. In causation there is no such thing as *might be due;* such a statement is only suited for the law courts, where evasion of the truth is common. He utterly ignores the teaching of Newton, Hamilton, Koch, and Kelvin, and yet tries to pose as a scientific man. Bacteria have no more to do with the causation of "the soldier's heart" than the man in the moon, and yet a few sublunary controversialists readily set up such a bogey, and get annoyed when it is knocked down. Talleyrand said that "speech has been given to man to disguise his thought." Unfortunately for Mr. Turner, he does not find language sufficient to cloak his lack of knowledge.

He talks about the owner of a foul breath swallowing decomposing food. That individual must have his cesspool at the wrong end of his alimentary tract when he decomposes his food before swallowing it. I thought that the food which decomposed was that which clung to the teeth, and that it was the business of the dentist to instruct his clients to prevent such retention and subsequent decomposition.

He talks about inflammation as if he knew something about it, oblivious of the fact that it is a reaction of the tissues against disease or injury. To him it is the disease itself, and "there can be no inflammation without some degree of general injury is a pathological axiom." He can manufacture axioms with the greatest ease, but I do not think that he will find many ready to swallow them. He is evidently not a follower of Sir Frederick Treves, who said that a localized peritonitis is Nature's method of curing appendicitis. The inflammatory barrier which Nature sets up in the mouth is, according to him "necessarily injurious." He further says, "in a case of dental sepsis, in addition to the visible areas of inflammation there are generally concealed areas of inflammation and suppuration, and *that these latter areas often exist with little or no external sign.*" (The italics are mine.) I have heard such yarns before when the operator wished to make a big job or cover a bungle. I should have thought that a man of his acumen would have readily discovered "the less gross signs of inflammation in the mouth," let alone the extremely gross evidence of the tension of pent-up pus. In my opinion, we want to eradicate the sepsis, and then the inflammatory barrier, which Nature has more or less successfully set up, will soon subside. I can give Mr. Turner the name and address of a dentist in London who has been very successful in this line of work. I only know this gentleman through some of the results of his treatment. By their fruits ye shall know them. I know Mr. Turner by his writings only.

What does he mean by the reiteration of his statement, "exclusion of dental sepsis is indeed ill founded"? I wish dental sepsis were excluded from the mouth. I only excluded it as a cause of hyperthyroidism and "the soldier's heart," but Mr. Turner and his friends have ignominiously failed to establish any position for sepsis of any kind in any place as even a cause of hyperthyroidism. Dental sepsis seems to be a disease of civilization where dentists abound, and it is very rare among negroes, who are their own dentists. Prevention is better than cure.

He tells us that his "reason for entering this discussion was to disallow Sir James Barr's neglect of dental sepsis as a possible important factor in any disease which *may be* of microbic causation." We have here got *suppressio veri et suggestio falsi* with a vengeance. I never neglected dental sepsis in any shape, form, or fashion. Neither Mr. Turner nor any one else has ever adduced a scintilla of proof that sepsis of any kind has ever caused hyperthyroidism or "the soldier's heart."—I am, etc.,

Liverpool, Aug. 5th. JAMES BARR.

TREATMENT OF "SHELL SHOCK."

SIR,—I should like to draw Dr. Percy Cooper's attention to a communication I made to the Laryngological Section of the Royal Society of Medicine in March of this year, and prior to the publication of Captain Milligan's valuable paper. It has fallen to my lot since the commencement of the war to see a considerable number of cases of so-called "functional" aphonia where the power of adducting the vocal cords has been either partially or completely in abeyance. In many of these cases the more ordinary methods of treatment, such as rest and quiet, the introduction of a brush into the larynx, administration of the bromides with or without valerian, the use of the faradic current, or re-education, have been sufficient to restore the voice.

In certain other cases, however—and more especially amongst those who have been "buried"—despite prolonged rest and treatment, the voice has absolutely refused to return. In this particular class of case I have for many months been using a method of "chloroform hypnosis" as follows: The patient is placed very lightly under a general anaesthetic, and a laryngeal spatula is introduced into the larynx and moved gently from side to side so as to stimulate the sensitive laryngeal reflexes. At the moment when the stimulus begins to take effect the anaesthetic is entirely stopped and the patient is encouraged to shout, and as a rule he does shout! He is now allowed to emerge from the anaesthetic fully conscious that he is using his voice. In a paper upon warfare injuries and neuroses[1] I expressed the opinion that the abrogation of function in such cases was due, not to the existence of any organic lesion, but to a temporary suspension of neuron impulses from the higher cortical cells of the central nervous system to the periphery—in other words, to a sudden arrest, probably of vasomotor origin, of those volitional impulses requisite to produce speech.

[1] *Journal of Laryngology*, August, 1915.

A word of caution is necessary, however. The possibility of early laryngeal tuberculosis or of some other gross intralaryngeal lesion should always be borne in mind as a possible cause of the existing aphonia. In only one of the cases I have treated by "chloroform hypnosis" has there been, so far as I am aware, any relapse.—I am, etc.,

WILLIAM MILLIGAN,
Major R.A.M.C.(T).

Manchester, Aug. 7th.

THE FASTING TREATMENT OF DIABETES.

SIR,—It is quite likely that in my remarks on Dr. Spriggs's paper on the fasting treatment of diabetes I should confirm statements made by Dr. Leyton, for our experience seems to have been much the same. I cannot claim to have treated "many dozens of cases," but I have obtained very gratifying results with the majority of the thirty odd in which I have employed it since Allen published his paper in 1915.[1] If I paraphrased the remarks made by Dr. Leyton in his paper read at the Royal Society of Medicine, I did so quite unconsciously and unintentionally, for I only heard a portion of it, and have become fully acquainted with its contents since my letter was sent to you on June 17th.

With regard to the table in my letter to which Dr. Leyton refers, most of the figures are the mean of three or more observations made on materials bought in the open market and prepared for table by the ordinary methods of cookery. They are, of course, only average values, but in practice one is bound to work with averages, and it is surprising how nearly the figures given by direct analysis of a mixture of vegetables, in spite of individual variations, correspond as a rule to the added values worked out from such a table. The example of boiled turnip which Dr. Leyton selects for criticism raises an important and interesting point—namely, the difference between the carbohydrate of a food as usually ascertained by the chemist and the available carbohydrate, which is the important clinical value. The "carbohydrate" as ordinarily reported in food tables is estimated by difference—that is, by subtracting the percentages of protein, fat, ash, and water from one hundred—hence all the errors in these estimations are charged to the carbohydrate; and, further, the "carbohydrate" includes woody fibre, gums, pectins, etc., that are of no food value. The only satisfactory method is to estimate the carbohydrate by direct analysis, and this is the way my figures have been obtained. Turnips are singularly free from starch and sugar, the bulk of the "carbohydrate" consisting of pectose bodies which gelatinize on boiling, but do not yield dextrose either then or on digestion. As starch and sugar are practically non-existent in turnips, the carbohydrate value of 1 gram for 5 oz. I have allowed errs rather on the safe side. Taking Atwater and Bryant's figures for blackberries—7.5 per cent. to 16.7 per cent.—we have an average of 12.1 per cent., which is about as much above my average figure as the latter is above the 8 per cent. given by Street in his report on diabetic foods.[2] I think therefore that it may be taken as a fairly safe working figure.—I am, etc.,

P. J. CAMMIDGE.

London, W., Aug. 5th.

Universities and Colleges.

UNIVERSITY OF LONDON.

MEETING OF THE SENATE.

A MEETING of the Senate was held on July 19th.

Recognition of Teachers.—The following have been recognized as teachers in the subjects and at the institutions indicated: Dr. R. A. Lyster (Hygiene—St. Bartholomew's Hospital); Dr. E. Holland (Midwifery and Diseases of Women—London Hospital).

Household and Social Science.—Miss Janet Lane-Claypon, M.D., has been appointed head of the Household and Social Science Department, King's College for Women, with the title of dean.

Council for External Students.—Dr. S. Russell Wells has been appointed chairman of the council for external students.

MEDICAL SCHOLARSHIPS.

THE following medical scholarships have been awarded by the London Intercollegiate Scholarships Board at the institutions indicated:

UNIVERSITY COLLEGE.—*Bucknill Scholarship* (Faculty of Medical Sciences) and the *First Medical Entrance Exhibition* divided equally between Messrs. H. D. Cadman and H. A. Harris. *Second Medical Entrance Exhibition:* Mr. H. G. Goldwater.

KING'S COLLEGE.—*Warneford Scholarships:* R. H. Yelf, C. E. Bacon, and J. N. Morris.

WESTMINSTER HOSPITAL MEDICAL SCHOOL.—*Arts Scholarship:* L. J. Soutter.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL.—*Arts Scholarship:* N. C. Scott. *Science Scholarship:* A. G. Dobrashian.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN.—*St. Dunstan's Exhibition:* E. M. K. Salmond. *Isabel Thorne Scholarship:* O. J. Flecker. *Mabel Sharman Crawford Scholarship:* M. H. S. Auden. *Prox. Accessit:* P. M. Phillips.

The Services.

EXCHANGES.

CAPTAIN R.A.M.C.(T.) attached to battalion not proceeding abroad desires exchange with M.O. to battalion or field ambulance about to proceed to or already in France.—Address No. 3099, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Surgical specialist at a base hospital in France desires to exchange with surgeon attached to casualty clearing station, field ambulance, or R.G.A.—Address No. 3100, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Captain R.A.M.C.(T.), Yeomanry regiment, desires exchange into field ambulance, base hospital or regiment at front or abroad.—Address No. 2899, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.

Obituary.

WILLIAM TAYLOR, M.D., F.R.C.P.EDIN.,

EDINBURGH.

DR. WILLIAM TAYLOR, who died at his residence in Edinburgh on July 31st, after an acute illness, was in his 80th year. He was born in Forfarshire, and after some years spent in business in Australia studied medicine in the University of Edinburgh and graduated M.D. in 1867. It was this comparatively late entrance into the ranks of the profession which made Dr. Taylor the academical contemporary of so many men his juniors in age. He was elected a Fellow of the Royal College of Physicians in 1883. He had then been associated with the University for several years, first as assistant to Laycock, the Professor of Practice of Physic, and next as assistant to Professor James Spence, whose textbook on *Systematic Surgery* he re-edited with scrupulous care. He was always greatly interested in midwifery, and was elected a Fellow of the Edinburgh Obstetrical Society in 1868. He was fond of telling how he maintained the fetal circulation in a pair of twins after birth by means of artificial heat in water; indeed, he published an account of the case in the *Edinburgh Medical Journal* of 1865 (vol. x, p. 752), although he was then only a medical student who was given charge in the Maternity Hospital. He made many contributions to the *Transactions* of the Royal Scottish Society of Arts, and had been its president. He also wrote papers on the restorative treatment of varicose veins, on the treatment of neuralgia and rheumatism by currents of hot air, and on recrudescence in scarlatina. He made a special study of gout, and was fond of saying that all great men were gouty, adding, with a smile, that all gouty men were not, however, great. His eldest son, W. Macrae Taylor, took part in the South African war (medal), and is at present serving at the front (Major, R.A.M.C.). Dr. Taylor is also survived by another son and by two daughters, the elder of whom is serving abroad as a nurse.

Sir HALLIDAY CROOM writes: During his early days Dr. Taylor was very intimately associated with the University. He was assistant to Professor Laycock for two years and afterwards became assistant both in the University and in private to the late Professor Spence, in connexion with whom for many years he taught bandaging and minor surgery. At this sort of teaching he was a special adept, and after leaving the University he opened a class of his own which was extraordinarily popular and which after two or three years' duration he gave up no one knew why. He kept up his association with the University by regular attendance at the Assistants' Club, in this way maintaining his touch with the younger men. From his earliest years to the end of his life he was deeply interested in mechanical work and in electricity. In his

[1] *Amer. Journ. Med. Sci.*, 1915, p. 480.
[2] Report of the Connecticut Agricultural Experimental Station. 1913.

house he had an excellent installation which he used extensively. He was a Fellow and President of the Royal Physical Society, to which he communicated many papers. Amongst the more medical societies to which he belonged his attention was specially directed to the Obstetrical Society, which, in his early days, he attended and took very often a lively part in the discussions. For years he rented Swanston Cottage in the Pentland Hills, so long and so intimately associated with Robert Louis Stevenson, and here he entertained hosts of friends with reminiscences and readings from the distinguished author. The social element of his nature was further developed in his long membership of that famous old club, the Monks of St. Giles, where he entertained his brethren with poetry and most happy and witty speeches.

THE LATE SIR VICTOR HORSLEY.—We have received the following letter:

Sir,

In one of the accounts of Sir V. Horsley in the BRITISH MEDICAL JOURNAL of July 29th there is a sentence which says that "he grew less tolerant as he grew older. . . ." (p. 164). Perhaps you will allow me to hint that his impatience and intolerance over delay in reforms which his statesmanlike foresight realized were already overdue, for the good of humanity, arose, in recent years, partly from two things:

1. The feeling that, having reached middle age, his time for helping forward things was becoming short, whilst other labourers were still "few."
2. His disquietude at the way in which the ramifications and "combines" of evil seemed latterly to display their forces more openly against the public weal.

Now, the question arises as to whether "intolerance" of this origin can be stigmatized as a "fault"? If we recognize that alongside of his quickness and grasp of intellect there ran a capacity for irritation and disappointment over what naturally appeared to him to be the denseness and inertia of those who possessed the power to act and did not, then we have some clue to his nature, and to what he frequently suffered in silence and patience. Seeing we are discussing faults, surely it has been a far graver "fault" for most of us, his 20,000 or more colleagues to have held back and not really striven to sacrifice ourselves, as he certainly did year in and year out, on behalf of national health and its sequence—happiness? For instance, when and where have any of us expressed as he did *constant* dismay over the dwelling of thousands of families in single rooms? Yet, hygienically, as a guardian of the public health, he was nothing but right; and we had, and have, only to rise as a united profession and determine on a radical national reform on this basic health matter, to make any Government listen and probably act. Again, why have we not been doing our duty, both individually as patriots and unitedly as a profession, which has as a first duty the guardianship of the public health, by protesting, for instance, against the recent taxation of valuable foodstuffs? It is a medical rather than political matter.

Would that we all had Victor Horsley's power of visualizing the homes of the hungry poor and the thin bodies and pale faces of the growing breakfastless children, or the trembling old age pensioners, at present starving on their meagre 5s. a week. We should forthwith begin to express ourselves forcibly and aim at wise corporate advice and action on behalf of the heart of the great empire to which we belong and which he, as one of us, served faithfully and to the end.

Yours truly,
MARY D. STURGE.

Medical News.

THE Wounded Allies Relief Committee, of Sardinia House, Kingsway, has presented to the Russian Red Cross Society a second fleet of motor ambulances.

IN 1915 the Académie Française proposed as the subject of the prize for poetry offered by the State "The Glory of Pasteur." The prize has been awarded to Dr. Charles Richet, the distinguished professor of physiology in the University of Paris.

SINCE the commencement of the war 615 past and present students of University College Hospital Medical School, London, have joined the navy and army, 11 have died on service, 53 have been mentioned in dispatches, and honours have been conferred upon 21.

THE Board of Education has instituted a scheme for providing interned British prisoners of war with good books of an educational character. It is already in a position to supply books on almost any subject for reading or private study, and desires that the fact should be made known to interned prisoners. Requests for books, or lists of suitable books which would be given to this book scheme, should be addressed to Mr. A. T. Davies, Board of Education, Whitehall, London, S.W.

THE Central Midwives Board met on August 4th to consider penal charges against two midwives. Sir Francis Champneys presided. The charges in the first case were concerned principally with neglect of ophthalmia neonatorum. Two out of four charges were cancelled but the remaining two were admitted. Total blindness was caused in one instance and the midwife was struck off. The case against the second midwife was dismissed, the board finding that no offence under the rules had been committed.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westrand, London*; telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westrand, London*; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Mediseera Westrand, London*; telephone, 2634, Gerrard. The address of the Irish office of the British Medical Association is 16, South Frederick Street, Dublin.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

LETTERS, NOTES, ETC.

ACUTE ASCENDING PARALYSIS.

TEMPORARY SURGEON HALLIDAY SUTHERLAND, Royal Naval Hospital, Pembroke Dock, South Wales, has glycerinated portions of the spinal cord from a case of acute ascending paralysis (Landry's paralysis), and would be glad to hear from any physiologist or pathologist who has facilities for the inoculation of monkeys, and who may wish to study the disease in these animals.

MEDICATED WINES.

THE Central Control Board (Liquor Traffic) has issued an amending order directing that the following provision shall be inserted in any order of the board made with reference to the sale of medicated wines:—"Provided also that in any case where such medicated wine, or mixture, or preparation is sold or supplied in a bottle or other vessel enclosed in a sealed packet, and is so sold or supplied at any time before the 9th day of October, 1916, it shall be deemed to be a sufficient compliance with the terms and conditions of this order if such sealed packet bears such label."

FORMALIN IN PRURITUS ANI.

DR. J. CROPPER, Lt. R.A.M.C. (Chepstow) writes: Two or three years ago I published a note on tincture of iodine in this troublesome affection. Further experience showed that some cases were cured and remain so. In others the effect wore off after some months; in a few no good resulted. This is the history of many "cures," but may partly be accounted for by supposing that similar symptoms may be caused by different infections, or by the same organism at different times, just as conjunctivitis may be caused by five or six different organisms, if not more. Again, pruritus ani may be intense without much discharge, or may be accompanied by profuse weeping or even fetor and pus. I now submit the following, which, in addition to others, has succeeded in the case of a medical friend who found no benefit from iodine, but responds to *x*-ray treatment temporarily. The remedy is formalin, that is, the ordinary solution of formaldehyde (40 per cent.), 1 per cent. or 2 per cent. in starch jelly—the latter is about the strongest which it is advisable to use. If irritation is severe, which rarely happens, the application can easily be sponged off, and the irritation ceases at once. The remedy is cheap, easily got, and above all clean. The effect is almost immediate, and so far I have not had a failure with it even in chronic cases. I have tried both eusol and succus alii without much effect.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.

INJURIES OF THE BLADDER AND URETHRA IN WAR.

BY

COLONEL ANDREW FULLERTON, C.M.G., A.M.S., M.D., M.Ch., F.R.C.S.Irel.,

CONSULTING SURGEON BRITISH EXPEDITIONARY FORCE.

Wounds of the bladder and urethra have received very little attention on the part of writers on military surgery during the present war. It has been assumed, perhaps too hastily, that there is nothing special to be said about the management of these injuries. During the last year I have seen most of those that have passed through my area, and, though the number has not been large compared with wounds in other regions of the body, some of the cases have been of great interest and importance, especially from the point of view of treatment.

I gather from what I have seen that there are practically only two lines of treatment adopted for these injuries at the casualty clearing stations—namely, (*a*) the tying in of a catheter, or (*b*) suprapubic cystostomy. Now, though each of these methods has a definite place as a surgical procedure under suitable conditions, there seems to be a want of appreciation in the mind of operators of the objects to be attained by these methods, and the dangers attending their indiscriminate use. A few remarks on the types of injury usually met with and the lines of treatment I have found most beneficial may not, therefore, be out of place.

Wounds of the Bladder.

Wounds of the bladder may be produced by bullets, shrapnel, shell, bombs, etc., and have certain dangers distinct from those produced by these missiles in other parts of the body. The more ragged the edges and surfaces of the missile, the more likely is clothing and dirt to be carried in and produce the usual sepsis. The missile may reach the bladder laterally, antero-posteriorly, or from above or below, and the track is often long and tortuous. Complications may occur in the form of fractures of the femur, pelvic bones, or spinal column; injuries to large vessels or nerves, injuries to the intestine, or extravasation of urine. A troublesome complication is involvement of the rectum, with the discharge of faeces into the bladder, of urine into the rectum, or of both through the wound in the soft parts. Wounds of the bladder may be intra- or extra-peritoneal, or both, and each variety has special dangers and requires special treatment. The intraperitoneal wounds are, as a rule, reached with comparative ease, whereas those outside the limits of the peritoneum may be quite inaccessible, especially those at the base and sides. The missile may stop short after wounding the bladder, it may enter and remain in the viscus, or it may pass through, leaving wounds of entry and exit. The wounds seen have been of all sizes and shapes, from small punctures to the most extensive laceration.

Signs and Symptoms.

The signs and symptoms of injury to the bladder will, of course, vary with the position and extent of the wound and the concomitant injuries to other organs and structures.

Intraperitoneal injury will probably be associated in many cases with injury to the intestine, and the usual signs of a ruptured viscus will be present. Urine may be discharged in such quantities into the peritoneal cavity that none passes by the urethra. A perforating wound of the abdomen in the bladder region will generally be explored, and it will not be necessary to adopt the ancient and clumsy method of pumping into the bladder a known quantity of fluid and measuring the amount returned. If the wound is small and a cystoscope is at hand, valuable information may be obtained as to the size and position of the opening or openings, and the presence or absence of a foreign body. If the patient can void urine at all haematuria will probably be present. Haematuria itself is not, however, evidence of a direct wound of the bladder, and I have seen two cases in which the latter showed splashes of haemorrhage into the mucous membrane though the missile had not directly involved the viscus. The first occurred in a case of injury to the spine in the lumbar region, and the second in a case in which the missile had traversed the posterior wall of the rectum without touching the bladder. As previously stated, in most cases of intraperitoneal injury the abdomen will be explored before reaching a base hospital, and, under present conditions, the same procedure should be carried out even in cases of doubtful injury.

In extraperitoneal wounds the chief signs and symptoms are—escape of urine from the wound, haematuria, and later, in many cases, the signs and symptoms of cystitis. The urine may not escape from the wound for several days after injury, or, in other words, until the sloughs have begun to disintegrate and separate. The patient may pass some urine by the urethra, but the fistula will leak more or less continuously in addition. If the fistula is narrow, the urine will be discharged more freely when the bladder has become to some extent distended and the patient makes efforts to micturate. In other cases the leak will be more uniform and continuous. Haematuria may be severe, and in some cases huge clots may form in the bladder. These complicate treatment, and are a serious source of trouble and danger, both from the mechanical difficulty they offer to normal micturition and to catheterization, and from the ease with which they become infected. When cystitis occurs, frequent attempts to micturate, scalding, straining, and penile pain add to the patient's discomfort.

Wounds of the Urethra.

For our present purpose it will be convenient to divide these injuries into two classes—those of the pendulous urethra and those of the fixed portion. The latter includes the bulbous urethra, the membranous urethra, and the prostatic urethra.

Wounds of the pendulous urethra have not been frequent in my experience, and they need not detain us here.

Wounds of the fixed urethra are comparatively frequent, and are produced by missiles which penetrate through the buttocks, the upper part of the thighs, or, more rarely, the front or back of the pelvis. Missiles passing transversely at the level of the lower part of the great trochanter may involve the prostatic portion. Those passing transversely at the level of the middle of the small trochanter may involve the bulbous portion. Between these levels the membranous urethra is liable to be injured. Concurrent injury of the rectum may occur in antero-posterior wounds. Any degree of injury to the urethra may be met with, varying from slight contusion to complete destruction of a segment. The signs and symptoms include possibly a wound in the perineum, ecchymosis of the perineum or scrotum, or both; haemorrhage from the urethra, independent of micturition; difficult micturition or complete retention; and, in some cases, extravasation of urine. If an open wound exists which communicates with the urethra, a urinary fistula is established, which leaks only when the patient passes water, provided the sphincteric apparatus of the bladder is intact.

Treatment of Wounds of the Bladder.

Intraperitoneal Wounds.

Intraperitoneal wounds of the bladder will usually be treated at the casualty clearing stations. These injuries may be complicated by wounds of the intestine, which will be dealt with in the usual way by infolding or excision. The wound in the bladder wall, if easily accessible and of moderate dimensions, may be excised so as to bring fresh healthy surfaces together, with a good prospect of prompt and sound healing. I have recently been advocating the use of the thermo-cautery to sterilize the edges of wounds which are to be excised in other parts of the body. The charred edges are removed, and the fresh surfaces are brought together. Foreign bodies will, of course, be removed from the cavity of the bladder, if present, and from other situations in the pelvis, if accessible. Catgut of good quality ought to be used to bring together the muscular walls rather than non-absorbable material, in order to avoid subsequent calculus formation. Fine silk or linen thread may be used for the peritoneal suture, though good catgut will answer the purpose. The sutures should be continuous in order to render the bladder watertight. If the wound is very extensive, and much laceration is present, it may be impossible to close the bladder, in which case an attempt must be made to render the wound in the latter extraperitoneal. In most cases of intraperitoneal bladder

wounds operated on at the front the viscus has been completely closed. The peritoneal cavity is now cleansed, and, if much soiling is present, it is wise to insert a drain into the recto-vesical pouch. The question now arises as to whether a catheter ought to be tied in. In transperitoneal operations in civil practice I have found it unnecessary; at the same time it is well to encourage the patient to avoid distension and, if necessary, to pass a catheter every four hours until it is judged that union is firm. If the peritoneal surfaces have been well turned in and a continuous suture employed, leakage into the peritoneal cavity is very unlikely to occur. The objections to the practice of tying in a catheter will be dealt with later. A case recently operated on by Captain D. C. Taylor at a casualty clearing station, which subsequently came under the care of Major West at a base hospital, will illustrate the correct method of dealing with cases of this sort. I am indebted to Captain Taylor for notes of this case, sent down with the patient, but I shall use only those that bear on the question under consideration, leaving Captain Taylor to publish later the full account with that of other abdominal cases operated on by him at his clearing station.

CASE I.

Pte. McK. was wounded with high explosive shell on June 5th, 1916, three hours before admission. The fragment entered on the left side in the mid-axillary line 1½ in. above the iliac crest, and was retained. The patient had a pulse of 140 on admission, vomited, and had blood in the urine withdrawn by catheter.

Laparotomy was performed, the pelvis was found full of blood, and the ileum perforated in many places. Four feet of intestine were removed. There was a small hole in the posterior wall of the bladder, and a piece of shell was removed from the latter. The bladder wall was sutured, a drain was placed in the recto-vesical pouch, and the abdomen was closed. A catheter was passed every four hours for three days.

I saw the patient with Major West on June 14th, 1916, that is, nine days after injury. The wound in the abdominal wall had healed by first intention except for the track of the drainage tube, and the patient was passing normal urine and was in a highly satisfactory condition.

It will be observed that in this case no catheter was tied in, and although a piece of shell was removed from the bladder, it was not considered necessary to drain the latter. Captain Taylor is to be congratulated on the successful issue of this case.

Extraperitoneal Wounds.

Extraperitoneal wounds of the bladder are treated for the most part at the base, and offer problems for successful management not quite so simple as might at first sight appear.

In those cases in which the rectum is also wounded, and faeces are discharged into the bladder, a colostomy must be done to divert the flow. A transverse colostomy above the umbilicus is much better than an inguinal colostomy in these cases on account of the proximity of the latter to the suprapubic area should it be considered necessary to undertake any operation on the bladder in that region. Further advantages of transverse colostomy are as follows:

1. The stoma is far removed from the wounded area.
2. The opening is easily controlled.
3. Restoration of the continuity of the bowel is easily accomplished when the need for an artificial opening is past.
4. Should it become necessary later to remove any part of a damaged rectum, the pelvic colon can be mobilized and brought down to supply the deficiency, if it has not previously been interfered with by an inguinal colostomy.

A case which I saw in consultation with Captain Fitzmaurice Kelly at a base hospital will illustrate some points in the management of cases of this kind.

CASE II.

Pte. S. was wounded on August 2nd, 1915, by a bullet which entered 1 in. above the pubis and 1 in. to the right of the middle line in front. Passing from before back, it emerged through the third piece of the sacrum, also to the right of the middle line. The bladder is stated to have been full at the time of injury. The patient was admitted to a base hospital on August 8th.

On admission, there was found to be slight leakage of urine from the anterior wound; the bulk of the urine, however, and all the faeces were discharged from the large exit wound.

On August 9th Captain Kelly brought out the transverse colon, which he opened on August 10th. Irrigation of the bladder was carried out through the wound in the sacral region by means of a Carrel-Dakin tube and eusol. The wounds rapidly cleaned up, and normal micturition was restored early in September, when the cystoscope showed both bladder wounds healed and a disappearing cystitis. The patient was discharged to England on September 21st, 1915.

Captain Kelly recently received a letter from the medical officer in charge of the case in England, dated March 2nd, 1916, which stated that the patient was practically cured, and that the colostomy wound had been closed. There was now no discharge from the remains of the sinuses. It will be observed that in this case suprapubic cystostomy was not performed.

I am indebted to Captain Kelly for notes of this case. The opening at the base of the bladder was sufficiently large to allow of proper cleansing and drainage, and there was no point in making another, or rather enlarging the existing one, in the suprapubic region. Extraperitoneal injuries to the bladder are frequently produced by missiles which enter through the buttocks and upper part of the thighs. The track of the missile is frequently long and tortuous, being rarely less than two inches and frequently as much as six inches or more in length. Notwithstanding their tortuous character, many of these wounds with urine pouring from them come down from the front in a surprisingly healthy condition, and I have in these cases decided against any further operation on the bladder itself.

This treatment is not in accord with the usually accepted practice, which is to perform suprapubic cystostomy. The object of this appears to be to prevent urine from passing over the wounded surfaces, and to drain the bladder. Now most of the men in the fighting line have a most efficient saline antibacterial fluid in the sterile secretion which passes into their urinary bladder from their kidneys. If proper drainage be established in the wound leading down to the bladder, urine flows through the fistula, and the wound is kept continually irrigated. If the urine remains undecomposed there is no necessity to interfere with such an admirable arrangement. It is true that the bladder may become infected from the wound, and that instead of aseptic urine a highly irritating fluid may be forced through the fistula. It will be seen from what follows that this can be prevented to a large extent, and that even if the urine has been allowed to become foul, properly conducted irrigation of the bladder will in some cases at least restore the urine to its former sweetness. In addition to the surgical treatment, urinary antiseptics may be given internally, in the hope that they may have a beneficial effect on the urine and on the wound.

If the bladder is severely lacerated and large sloughs are likely to separate into and foul its interior, there can be no question that the bladder must be drained. I shall be reminded, no doubt, of the disastrous results of urinary extravasation in cases of ruptured urethra in civil practice. In those cases in which the urethra gives way behind a stricture the urine is likely to be septic, and, both in these and in traumatic cases, the urine is forced under considerable pressure beneath resistant fasciae. Sloughing of skin and subcutaneous tissue is, however, not unknown when other fluids are introduced under the skin. I have in my mind at the moment a case of this type in which a huge slough occurred in the upper part of the thigh after a subcutaneous injection of saline. Further, the surprisingly rapid recovery of cases of perineal section demonstrates the innocuous effect of the urine which necessarily flows over such a wound.

Let us suppose that we have a case of a bullet wound in the buttock involving the bladder. Urine is continuously forced out through the fistula. The usual suprapubic cystostomy is performed. Let the urine which lies at the bottom of the bladder, no matter what method of drainage be employed, be taken and examined. Instead of clear urine, a turbid fluid containing pus and many varieties of micro-organisms will be found; in other words, a mixed infection has occurred. Suprapubic cystostomy does not necessarily prevent leakage from the fistula, and I have under observation at the present moment two cases in which, notwithstanding suprapubic cystostomy, urine still finds its way through wounds in the buttocks. If the urine in the bladder can be kept clean and the fistula well drained, I believe it will be well to allow the patient to continue to flush his own wound from within outwards with a highly cleansing fluid like fresh urine. If the bladder becomes foul and irrigation fails to control the sepsis, and especially if the patient

begins to lose ground, cystostomy must be performed at once.

With regard to the presence of foreign bodies in the bladder, Captain Taylor's case, previously mentioned, and other cases we have seen, show that the bladder can be completely closed after removal of the missile, if the wound has been intraperitoneal. With an extraperitoneal wound, say, near the base of the bladder, when a foreign body has been removed by suprapubic cystostomy, the indications are not so clear. Extraperitoneal suture is not so likely to be satisfactory as intraperitoneal. The treatment to be adopted will depend on the condition of the bladder. I should like to try closure of the suprapubic wound in the bladder, the insertion of a drain into the space of Retzius, and assiduous attention to the bladder. If the latter becomes septic and the sepsis cannot be controlled by irrigation it is easy to open up the cystotomy wound. I may mention here that in wounds of the loin involving the kidney or ureter the resulting urinary fistulae seldom give rise to serious trouble. Most of the cases I have seen have done well, though the wounds have been continually soaked with urine.

The following two cases will illustrate the type of wound involving the bladder in which I think less severe measures than suprapubic cystostomy will be sufficient.

CASE III.

Sapper F. was wounded on February 2nd, 1916, by a bullet which entered over the great trochanter on the right side and lodged, as was afterwards ascertained, in the left thigh, passing across the pelvis, and causing much comminution of the right great trochanter. *X*-ray examination showed, in addition, fracture of the ilium and ischium on the same side. There was severe sepsis with an area of cellulitis and dusky red discoloration of the skin nine inches in diameter round the wound.

Captain Simpson, who was doing temporary duty at a base hospital, enlarged the wound and counter-drained in the region of the tuber ischii. In addition to the wound there was ecchymosis of the scrotum, but there were no urinary symptoms. Eleven days after the injury urine began to flow from the thigh wounds, at first independent of micturition, but later only when attempts to pass water were made. I was asked by Captain Bryan, who was now in charge of the case, to see the patient with a view to deciding as to the advisability of cystostomy. The cystoscope showed a healthy bladder. From the direction of the wound we came to the conclusion that the viscus was damaged near the neck and out of sight, about six inches deep from the entry wound in the thigh. As the patient's condition was good and the wounds were cleaning up and granulating well we decided against suprapubic cystostomy. On March 19th (about seven weeks after injury) a note was made to the effect that normal micturition was becoming established and that the leak of urine from the wound was very slight. A fortnight later the leak had ceased altogether and the case became one of fracture of the upper third of the femur.

The patient was evacuated to England on June 14th, 1916, with exact alignment of his femur and ½ in. of shortening. A small sinus led down to a piece of necrosed bone, which will probably need removal.

It is quite possible that this was really a case of wound of the urethra near the neck of the bladder and not of that organ itself, but it is suitably introduced at this stage as an illustration of the policy of non-interference. The nursing of a case of compound fracture of the thigh in the upper third is difficult enough of itself, but if, in addition, the patient has a suprapubic wound leaking urine, the difficulties are much increased. Captain Bryan's hammock bed proved invaluable in the management of the case. The second case, which I saw in consultation with Major West at a base hospital, may be described as a test case.

CASE IV.

Pte. H. was wounded on May 26th, 1916, by two fragments of shell, which entered the pelvis through the right buttock. *X*-ray examination showed two fragments of shell in the pelvic cavity. The one which was judged to have wounded the bladder was situated on the left side, seven inches from the plate which was placed on the patient's back. To reach its final destination the missile probably passed through the following structures: Skin, gluteus maximus, great sacro-sciatic foramen close to the gluteal vessels, obturator internus, levator ani, vesiculae seminales, and bladder wall (twice). The missile probably passed just inside the great sciatic nerve. There was no sign of fracture of the bony pelvis in the *x*-ray photograph.

There was no leakage of urine until four days after injury, when a little began to trickle through the wound, independent of micturition. On June 1st the patient was unable to pass water himself and complained of urgency. Up to this he had been able to pass some by the natural passage. A catheter withdrew 6 oz. of turbid urine.

The patient was examined with the cystoscope on June 1st. While on the operating table he passed some foul-smelling urine loaded with pus. The cystoscope showed general cystitis. On the left wall of the bladder was an area covered with dead white membrane, in the vicinity of which were some ecchymosed spots (point of exit of missile from bladder?). On the posterior wall was a punched-out circular aperture, rather less than the size of a threepenny-piece. Inside this circular area, which looked dark in colour, were some flecks of muco-pus and some small sloughs. On examination by the rectum no foreign body and no thickening could be felt. The patient had a slight evening rise of temperature, but was otherwise in good condition.

Major West was at first strongly in favour of suprapubic cystostomy. After consultation, however, we decided to begin with the less severe measure of washing out the bladder frequently and thoroughly, first with boiled water to get rid of the mucus and pus, and then with a weak solution of silver nitrate (2 to 10 grains to the pint). This alternate washing with water and nitrate solution was carried out at first twice and then once a day. Three days' treatment produced a great improvement, so that even at this early period the urine was almost clear. The patient continued to improve, and was discharged to England on June 13th, less than a fortnight after the commencement of this treatment, with his wound dry and his urine normal. His temperature had been normal for a week.

In this case foul-smelling urine was rendered sweet after a few days' irrigation. The patient will probably be fit to rejoin his regiment in a few weeks, whereas if suprapubic cystostomy had been performed his convalescence would have been much more prolonged. The foreign bodies were left, as it was thought that more damage might be done by delving in the pelvis than by leaving them alone, especially as the patient apparently suffered no inconvenience from their presence.

To sum up, I am of opinion that suprapubic cystostomy is not necessary in many cases of wounds of the bladder, provided that the latter can be kept clean and the external wound adequately drained. If there is likely to be much sloughing of the bladder walls, if there be severe and continuous primary or secondary haemorrhage, or if there be uncontrollable sepsis of the bladder, cystostomy will be the correct treatment. Cystostomy is performed not so much for any beneficial effect it may have upon the original wound, which must be dealt with on ordinary surgical principles, but in order to drain a badly infected bladder and to prevent the spread of infection to the kidneys. Extravasation of urine in concealed situations must be prevented by suitable incisions.

TREATMENT OF WOUNDS OF THE URETHRA.

The usual method of treatment in cases of wounds of the urethra seems to be that an attempt is first made to pass a catheter; if this succeeds, the instrument is tied in and the patient is sent to the base. Should catheterization fail, suprapubic cystostomy is performed.

Neither of these methods is, in my opinion, the best that can be done for the patient. Take the case with a catheter tied in first. An instrument cannot for long be retained in the urethra without causing urethritis. In a short time pus in seen oozing by the side of the catheter, and a dirty caked mass is found surrounding it at the meatus. The wound in the urethra, which may have been caused by a clean bullet, is now infected, and a slight injury perhaps is turned into a suppurating wound. But this is not the worst that may happen. The infection may extend back to the bladder and cystitis occur, or it may extend further still so as to involve the ureters and kidneys. I have seen all these things happen. The infection or additional infection of the wound of the urethra produces much greater infiltration than would have occurred otherwise, and the foundation of a severe stricture is thus laid. In addition to this, the catheter frequently becomes blocked, and it is not uncommon to find a full bladder with a blocked catheter effectually preventing micturition. Again, even in a few days, if the catheter is not removed, phosphatic deposit forms on the intravesical portion, the withdrawal of which excoriates an already inflamed urethra. The performance of suprapubic cystostomy is quite unnecessary, except perhaps in those rare cases in which blood finding its way back into the bladder forms large clots incapable of being evacuated. The treatment I suggest, and which is carried out in all cases referred to me, is as follows:

If the urethra is so damaged that either the patient is unable to void urine or is likely to have extravasation in attempting to do so, perineal section is performed. In all cases of doubt the same procedure is adopted. A dilator, a catheter, or any suitable instrument is passed down to the seat of injury, and, keeping strictly to the middle line,

the point of the instrument is cut down upon in the perineum.

Blood clot, irreparably damaged tissue, and foreign matter are removed, haemorrhage is arrested, and free drainage is established after thorough cleansing of the wound. The patient is now encouraged to pass his urine through the wound, hot compresses being used to relax his sphincter if necessary. If at first failure to pass urine should occur, it is better, in my opinion, to aspirate the bladder through healthy tissues above the pubes than to poke about in the perineal wound in the hope of finding the proximal end of the urethra or infect the healthy bladder by an instrument passed through a septic wound. When the sepsis has been controlled, dilatation, if necessary, can be carried out, and, later, plastic operations can be successfully attempted.

Here again the normal urine of the patient acts as an efficient cleansing lotion, and he flushes his wound from the depths outward every time he micturates. Treated on these lines cases of this sort heal with the greatest rapidity. The following two cases will illustrate some of the points I have tried to make.

CASE V.

Pte. J. W. H. was wounded on September 28th, 1915. A bullet entered the right groin in the region of the external abdominal ring and, passing obliquely across the pelvis, lodged in the left ischio-rectal fossa. A catheter was tied in at the front and the patient was passed on.

He was admitted to a base hospital on September 30th under the care of Captain Wolfenden. He was then in a toxic condition, though the temperature was only 99° and the pulse 100. He complained of pain and tenderness in the suprapubic region. No urine was passing through the catheter though the bladder was full. There was ecchymosis of the perineum but no extravasation of urine.

On October 1st the patient had a rigor, and Captain Wolfenden asked me to see him. We decided on perineal section. Captain Wolfenden accordingly explored the perineum, and found the bulbous urethra lacerated and a portion of the corpus spongiosum torn away. Unable to find the proximal end of the urethra, he opened the bladder above the pubis and drained it. The bullet, which had not injured the bony pelvis, was removed at the same sitting. The patient died from shock and toxaemia the same evening.

For a similar case in future I should suggest the following treatment: After injury, a perineal section should be done, so as to inspect the injured part, remove clots and tags, arrest haemorrhage, provide free vent for the urine so as to avoid extravasation, and thoroughly cleanse the wound, which should be left widely open. The patient should be encouraged to pass urine, and, if unable to do so, aseptic puncture of the bladder in the suprapubic region should be resorted to till micturition has been established through the perineum.

CASE VI.

Rifleman R. was wounded by a machine-gun bullet on February 17th, 1916. Blood flowed from the urethra after injury. There was a small, clear, circular entrance wound 1½ in. below and to the outer side of the left ischial tuberosity. The exit wound was on Nélaton's line, half-way between the great trochanter and the ischial tuberosity. The bullet had in its passage also made a figure-of-8-shaped wound in the perineum, close to the bulb. There was considerable ecchymosis of the perineum. The bullet had been extracted at the field ambulance. A No. 10 rubber catheter had been passed and tied in at the casualty clearing station.

On arrival at the base on February 18th, 1916, the catheter was found to be blocked, and no urine was passing through it. There was pus at the urethral orifice.

The catheter was removed, and I was asked to see the case with Captain Simpson. Perineal section, with treatment on the lines already indicated, was advised. Captain Simpson operated on February 19th and found the urethra divided as to three-quarters of its circumference, about one inch from the commencement of the bulb. He thought the case favourable for an attempt at suture of the divided urethra. The attempt failed, however, urine leaking freely on the third day. On February 25th, nine days after receipt of the injury, leakage from the perineum had ceased; on February 29th the perineal wound was almost healed; and on March 1st the patient was evacuated to England with his wound quite healed.

In this case an attempt was made by Captain Simpson to re-form the urethra round a catheter. This will rarely be desirable or feasible with gunshot wounds under war conditions. In case such an attempt were made I should suggest suture of the roof, leaving the floor of the urethra quite free for drainage, and the avoidance of a catheter.*

I do not know if the views expressed in this paper will meet with general acceptance They are only put forward to stimulate those who are dealing with cases such as I have described to consider each on its merits rather than adopt any hard-and-fast rule for all.

* An operation on these lines was suggested for stricture by a writer in the *British Journal of Surgery* more than a year ago.

A CASE OF CYST OF THE INTESTINE.

BY

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AND
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CYSTS connected with the intestine are rare, and, though usually found by chance at *post-mortem* examinations, may nevertheless be of occasional clinical interest and importance. They are found in newborn children and in the early years of life, but are quite likely to be met with in adults over thirty years of age.

Clinical History.

The subject of this communication was a baby 3 months old. It was admitted to University College Hospital under one of us (C. B.) on December 16th, 1915. The child was born at full term, when it weighed 8 lb., and was breast-fed till the age of 5 weeks. From birth it vomited a little after its feeds, the milk being returned unchanged. At the end of five weeks, this symptom becoming worse, the child was weaned and various kinds of foods administered without any relief to the vomiting. Wasting supervened after the first week. The bowels were from birth very constipated, being opened about once in four days until the end of the fourth week, when eight days elapsed on one occasion without an action occurring. The stools were otherwise normal. The vomiting, constipation, and wasting continued, and for a week previous to admission the bowels had not acted.

On admission the patient was a wasted female infant weighing 7 lb. 12 oz., and looked as if it would not live long. There was no general or local distension, neither could visible peristalsis be seen in the stomach or intestines. The liver could be easily felt. There was no tumour in the epigastric region, but a mass was palpable at the pelvic brim, which could be indented with the finger. The rectum was quite full of scybalous masses. The temperature was normal and the pulse varied from 108 to 136 beats per minute. There were no signs of disease in the heart or lungs. The child was not very hungry. It was put on feeds of cow's milk and water, and was given hyd. c cret. Olive oil enemata were administered.

Under this treatment the bowels acted from three to four times daily. The stools were green and very constipated. For the first five days the child vomited once a day, and for the next four days vomiting ceased, and the child appeared better. At the end of this time, however, the vomiting returned, the infant refused its feeds and died on January 1st, 1916.

Post-mortem Examination.

The body was emaciated and the abdomen considerably distended. The thoracic viscera showed no noteworthy changes.

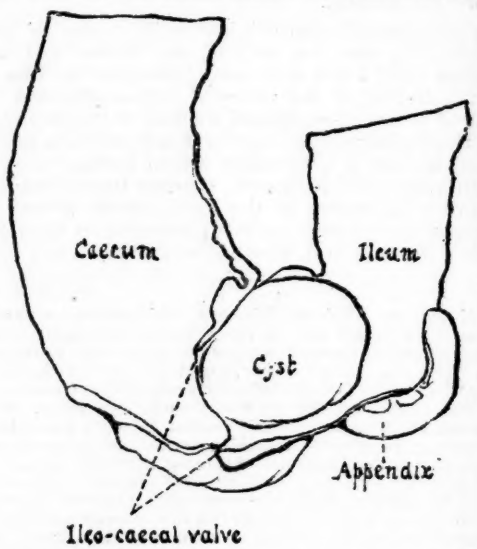

FIG. 1.—Diagram to show the relation of the cyst to the ileo-caecal valve.

The peritoneum was normal. The stomach and small intestine were considerably distended with gas, and the large intestine was empty and contracted.

Adhering to the terminal part of the ileum was a cyst, measuring 3 cm. by 2.5 cm., ovoidal in shape, with its long axis parallel with that of the bowel. (Fig. 1.) The cyst lay on the

mesenteric aspect of the ileum, between the layers of the mesentery, its cavity having no communication with the lumen of the intestine. Its wall was of considerable thickness in some places, in others thin and semitranslucent; its contents consisted of a clear, colourless, ropy fluid. The surface of the cyst and the adjacent coils of intestine were free from recent or chronic inflammation. The terminal portion of the ileum, as it coursed over the cyst, was flattened against the convex surface of the latter and stretched transversely; consequently the lumen of the bowel was linear in transverse section, and its opposed walls were held in contact firmly. On opening the bowel its lining was found to be slightly thinned where it lay over the cyst and in the adjoining portions of colon and ileum.

The mucous membrane was swollen, congested, and its follicles were enlarged. The cyst extended slightly beyond the lower limits of the ileum, its lower pole causing a low convex projection of the wall of the caecum just beyond the ileo-caecal valve.

Microscopical Examination of the Cyst Wall.

A section was taken from the thicker part of the cyst wall at a point remote from the ileum. Six distinct layers were recognizable in the section (Fig. 2); these were, from without

FIG. 2.—Diagram of section of cyst wall, showing the mucous membrane, which consists of a single layer of epithelial cells and a few tubular glands embedded in loose areolar tissue.

inwards: (1) A layer of loose areolar tissue containing large vessels and small lobules of embryonic fat, the mesenteric layer; (2) a layer of smooth muscle fibres cut longitudinally; (3) a layer of smooth muscle fibres cut transversely, of about the same thickness as the last layer; (4) a layer of loose areolar tissue containing thin-walled vessels; (5) a layer of smooth muscle fibres of about one-third the thickness of each of the other muscle layers, the muscularis mucosae; (6) mucous membrane, consisting of a loose cellular tissue covered with a single layer of columnar epithelium, and containing tubular glands in small numbers lined with epithelium similar to the surface epithelium. The surface was thrown into elevations and depressions, but well-formed villi were absent.

The characters described refer to the thicker part of the section. In the thinner parts the outer muscular layers were rather narrower; the muscularis mucosae was much narrower, broken up by fibrous tissue, and in places almost entirely absent; the mucous membrane was greatly reduced in width, had lost its glands, and in most places also its surface epithelium, and the elevations and depressions were almost obliterated.

From the pathological point of view the chief interest of this case lies in the evidence it affords of the origin of the cyst. Without a doubt it is congenital, and, further, it was originally a diverticulum from the intestine. The evidence for this statement is furnished by the facts that the cyst is lined by mucous membrane, and that its wall contains muscular layers similar to those of the intestine. This diverticulum became shut off from the interior of the intestine at an early stage of development, and its cavity

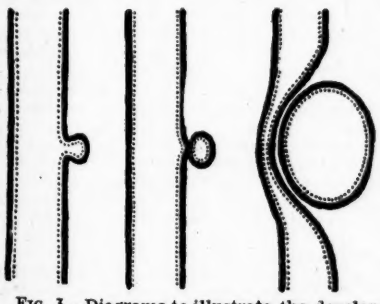

FIG. 3.—Diagrams to illustrate the development of the cyst from an intestinal diverticulum.

distended by the accumulation of mucus secreted by its rudimentary epithelium. As the cyst grew it projected into the lumen of the gut, causing partial obstruction of the latter. Fig. 3 shows the various stages of this process. The absence of meconium, and also of signs of infection of the cyst by micro-organisms, are due to the early closure of the mouth of the intestinal diverticulum.

Towards the end of the third month of fetal life the intestinal villi began to form as folds in the mucous membrane, giving rise to projections into the lumen of the gut, and at about the same time the covering epithelium between the villous elevations begins to sprout into glands, which burrow into the underlying tissue. If the mucous membrane were subjected to pressure at this period, such as would occur in the enlarging cyst, the villi would be prevented from forming, but the rudimentary glands would grow to some extent. Finally, the mucous membrane would become more flattened, and the glands would atrophy and leave a single layer of epithelial cells lining the cyst wall, which would eventually tend to disappear. The cyst, therefore, probably commenced to form towards the end of the third month of fetal life.

With regard to the nature of the diverticulum it is impossible to say whether it originally was the termination of the Vitelline duct in the intestine or an abnormal formation. The Vitelline duct projects from the free convexity of the bowel, but it is possible that by twisting and adhesion it might acquire such a position as to appear to have been intramesenterial from the beginning. Unless one adopts the latter view the diverticulum giving rise to this cyst must have been an abnormal formation.

The commonly accepted idea is that these congenital cysts originate from Meckel's diverticulum, the position of which is subject to considerable variation, and which is stated to have been seen within the mesentery. It is true that such cysts are in most cases situated at the usual site of Meckel's diverticulum; but they occur quite often at or near the ileo-caecal valve, more rarely in the jejunum, and a cyst has been described as communicating with the vermiform appendix.

The size of the cysts may vary from that of a man's head to that of a small body three-quarters of a centimetre in diameter. The cyst commonly projects from the free convexity of the bowel or is intramesenterial, but it may be submucous or in the muscular coat of the bowel. It is shut off from the cavity of the gut, but cases have been described in which its interior was connected with the lumen of the bowel by a canal. It may also be attached by a solid pedicle. The cyst has been found constricted in the middle into an hour-glass shape, and in one case a single submucous cyst was associated with an intramesenterial multilocular cyst. The wall of the cyst contains muscular tissue and the cavity is lined with mucous membrane more or less well developed, which occasionally may show well-marked villi in places or grow out into adenomatous polypi. Ciliated epithelium has been noted. The wall was described in one case as being calcified.

From the clinical point of view the case is of interest in that the patient showed symptoms of chronic intestinal obstruction and wasting as the result of the pressure of the cyst. These symptoms were not sufficiently definite to suggest operation, nor even to distinguish the disease from simple contipation and malnutrition so often seen in hospital practice in infants.

If the tumour had been felt or the symptoms been more definite, an operation might quite well have been performed, but the ultimate recovery of the child would have been doubtful.

A cyst has been described as of such a size as to obstruct delivery. Generally, however, these structures have been observed to give rise to intestinal obstruction, as in our case, which may be finally brought about through intussusception, and sometimes they have been felt as movable tumours in the abdomen with or without ascites. Torsion of the pedicle connecting the cyst with the gut has been observed giving rise to gangrene, and also perforation of the cyst and bowel with resulting peritonitis.

THE Journeymen Barbers' International Union of America has recently recommended that a sanatorium should be established, at an estimated cost of £200,000, for the treament of barbers suffering from tuberculosis.

THREE CASES OF GASTROPTOSIS TREATED BY GASTROPEXY (ROVSING).

BY
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THE three cases detailed below seem worthy of being placed on record for the following reasons: The patients were the subjects of well-marked gastroptosis, but (1) were males; it is stated that females are more commonly affected. (2) They were not neurasthenics—the usual type of patient in this disease. (3) Occupation appeared to be a predisposing factor in the causation of their complaint. They were all workmen who, over long periods, had, from the nature of their daily employment, to lift heavy weights, a considerable amount of strain being thereby put on their abdominal muscles and viscera. Case I worked in an iron foundry as a labourer, his main occupation consisting in lifting iron bars, weighing nearly a hundredweight, on to a trolley. Case II was employed in a wood yard, lifting heavy logs of wood on to a circular saw bench. Case III was a cloth inspector, and his work necessitated his lifting heavy rolls of cloth from one bench to another, the weight being borne on the upper part of his abdomen. (4) Great benefit has accrued from the operations, as reported in one case after three years and in another one year. The third case is comparatively recent.

CASE I.

A. B., aged 47. First came under observation in August, 1912, complaining of vague abdominal pains, indigestion, and distressing flatulence. Vomiting occurred every third day. Discomfort was most acute while at work, but as soon as he ceased work and went to bed he felt quite easy. There was some loss of weight. The abdomen was lax, but succussion could not be detected. The stomach percussion note was somewhat lower than normal, and over a somewhat wider area. No tumour or thickening at the pylorus could be detected on palpation. Various stomachic medicines and gastric lavage were tried, but with only modified success. Examination by *x*-ray screen after a bismuth meal showed, in the recumbent position, the shadow of the bismuth well below the umbilicus.

Laparotomy was performed by me in January, 1913. The stomach was found slightly dilated, and could be withdrawn from the abdominal cavity with considerable ease. No stenosis or thickening of the pylorus was present. Rovsing's operation was performed; three moderately strong silk sutures were introduced about 1 in. apart in one side of the wound, through skin, abdominal wall, and peritoneum; then carried through the outer coats of the stomach, nearer the lesser than the greater curvature, in a wavy fashion; the sutures were then brought through the other side of the wound from peritoneum to skin. The sutures were left untied until the layers of the abdominal wall had been separately sutured. The silk sutures were then secured over a roll of lint dipped in iodine spirit. The wound and silk sutures were not touched for eighteen days, and the patient was discharged on the thirty-second day following operation.

At the present time—three years after operation—he is in excellent health, has gained in weight, and follows his employment with no return of the stomach symptoms.

CASE II.

C. D., aged 41, was admitted to the Aberdeen Royal Infirmary in June, 1914. His illness began three years previously with a continual feeling of discomfort and fullness in the abdomen, with actually acute pain coming on from an hour to an hour and a half after food, the pain being generalized all over the abdomen. The pain and discomfort continued on an average for five days, and was then followed by vomiting of a large quantity of very sour stomach contents. Immediate relief followed the vomiting, the symptoms recurring, however, in the course of a few days. The vomited material consisted of a dirty fluid, nothing recognizable as food being observed. No history of haematemesis. The patient suffered much from eructations and borborygmi. Appetite good; constipation obstinate; no loss of weight. With rest and lavage his condition improved, and he was discharged at the end of July. He returned to work in August, but he became worse again, all the above symptoms returning in aggravated form. On readmission in November, 1914, the abdomen showed marked distension, with occasional peristaltic waves passing from left to right, below the umbilicus, pain being most acute during the peristaltic action. Percussion showed the stomach note to be much lower than normal, but there was no marked evidence of dilatation. A skiagram of a bismuth meal was taken by Major Levack, and showed the stomach shadow between the umbilicus and the pubis, the pylorus being markedly displaced downwards. This was very noticeable in screening the patient in the erect position. There was no evidence of dilatation.

Operation was performed by Mr. Scott Riddell in December, 1914. The stomach was found much prolapsed, and when brought outside the abdomen the greater curvature could be made to reach almost to the pubis. Gastropexy by Rovsing's method was performed, two supporting sutures being inserted. The parietal peritoneum and the surface of the stomach to be opposed to it near the sutures were scratched gently with a needle to promote adhesions. The patient was kept in bed in the recumbent position for three weeks and fed as in a case of perforated gastric ulcer. The patient made an excellent recovery, and when seen in December, 1915, was in excellent health, free from gastric symptoms, and had gained weight. He has now no difficulty with his bowels, and is able to perform his ordinary work without feelings of pain or discomfort.

CASE III.

A man, aged 51. Came under observation on October 13th, 1915, complaining of symptoms of chronic indigestion of many years' standing. His symptoms were, generally, very similar to those mentioned in Case II. Palpation of the abdomen revealed no evidence of tumour; percussion showed the stomach note to be lower than normal and to reach well below the umbilicus. A skiagram, after a bismuth meal, was taken by Major Levack, and the position of the stomach was seen to be midway between the umbilicus and pubis.

Rovsing's operation was performed by me, in the manner detailed under Case II. At the operation there was no evidence of pyloric stenosis or perigastric adhesions. The patient did well and left hospital, taking full diet without pain or discomfort, and expressing himself as better than he had been for many years.

I am indebted to Mr. Scott Riddell for permission to publish the notes of Cases II and III.

NOTE BY MR. SCOTT RIDDELL.

Senior Surgeon, Aberdeen Royal Infirmary.

The noteworthy points about these cases are: (1) The marked similarity of symptoms in cases of gastroptosis and gastrostasis from pyloric obstruction. (2) The marked assistance in diagnosis which can be got from skiagraphy after a bismuth meal, and particularly by screening and skiagraphy in the erect position; the lesser curvature in one of these cases was found well below the umbilicus. (3) The remarkable benefit which followed on the operation of gastropexy, and which appeared likely to be permanent. (4) The great ease and success with which Rovsing's operation can be performed as compared with Beyea's and other operations.

PERFORATION OF A GASTRIC ULCER OCCURRING IN THE SAC OF A LARGE CONGENITAL DIAPHRAGMATIC HERNIA.

BY
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DIAPHRAGMATIC herniae are rare, and the marked degree of the abnormality and the fact that death was due to rupture of a gastric ulcer and the difficulties in diagnosis lend special interest to the following case.

History.

The patient was a burgher, aged 56, who was taken ill while on active service in the German South-West African campaign. He had completed six months' service, and was apparently able to carry on the active and strenuous life of a burgher on commando. He had only a limited knowledge of English, and was in such pain when admitted to the surgical hospital at Swakopmund that details as to his illness were somewhat vague. For the last four years he had suffered from attacks of "liver," accompanied by pain in the hepatic region, with vomiting, but never any jaundice. During six months on active service he had felt well and fit for duty, but had occasional attacks of indigestion. He had complained for four days of severe pain in the abdomen, which pain became very acute fourteen hours before admission. Vomiting had been continuous since the acute onset of the pain. He had been constipated, but there was no complete obstruction, as the bowels had moved twice within the four days. The motions had been small, and passed after much straining. When admitted he was in great pain, in spite of which he walked into hospital and refused to lie down, remaining standing with the body bent well forward. He was with difficulty persuaded to take to bed, where he maintained this peculiar attitude of flexion until he died.

Condition on Admission.

The patient was a strong, well-developed man, having the appearance of one who had recently been leading an active life. Pain was complained of at the lower end of the sternum and under the ribs in front on the right side. The temperature was subnormal, 96°; the pulse 80. The abdominal wall was nowhere very rigid, nor were the abdominal respiratory movements much restricted. There was no abdominal distension. The liver

dullness was absent, except for a zone of 2 in. wide parallel to the costal margin and extending into the right flank. Above this and in the normal region of liver dullness the percussion note was tympanitic. Most puzzling signs were found when the thorax was examined. On the right side anteriorly a hyper-resonant note—tympanitic, in fact—was obtained from the costal margin as high as the lower border of the second rib; above this the percussion note became normal. Over this area of hyper-resonance the breath sounds were absent, but were present and normal at the apex. Posteriorly the hyper-resonant note extended from the costal margin to the seventh costal interspace, with deficient breath sounds over the same region; above this the lung appeared normal. No moist sounds were heard in any area.

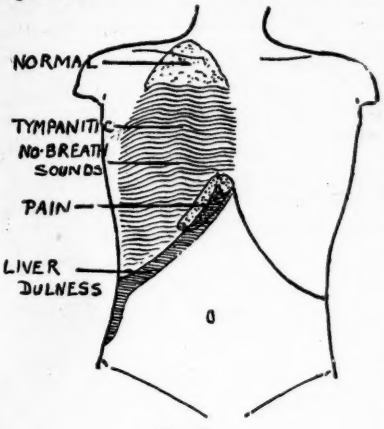

FIG. 1.

On the left side nothing abnormal was noted. The heart sounds were very faint; no apex beat could be seen or felt, nor could the outline of the heart be made out definitely by percussion. There was no jaundice. The urine was acid; it contained no albumin, pus, or blood.

The diagnosis was difficult. It was evident that there was an acute abdominal condition, but no satisfactory explanation of the lung signs could be arrived at. That a large diaphragmatic hernia was present was not considered. The question whether we should operate immediately for the acute obstruction was made doubtful by the lung signs. Did these point to the thorax being the primary seat of the acute illness? It was decided not to operate at once, and the patient rapidly grew worse and died with signs of acute general peritoneal infection.

Necropsy.

On opening the abdomen it was seen that recent general peritonitis was present and that a perforation of the stomach had taken place; it was not evident at first where this had occurred. It was found that half of the stomach passed up through a large opening in the diaphragm and occupied a huge hernial sac extending into the pleural cavity, and that the perforation had occurred within the sac at the pyloric end of the stomach. The ring of the hernial sac was situated on the right anterior portion of the central tendon of the diaphragm in front of the liver and measured 4 in. in each diameter. The margin was firm and tendinous with muscular fibres of the diaphragm blending with the tendinous ring anteriorly. The peritoneum became continuous with the serous membrane lining the sac. I was not able to satisfy myself that the right pleural and peritoneal cavities were thrown into one or whether the peritoneum had extended through the opening forming a true hernial sac. On passing the hand through the large ring the sac was found to extend upwards as far as the second intercostal space and an inch to the left of the left lateral sternal line, thus lying in front of the heart.

Laterally the sac extended to the costal wall, posteriorly to the vertebral column, except to the level of the seventh rib, above which the small rudimentary lung was situated. There was no lung between the sac and the antero-lateral aspect of the chest. The contents of the sac were: (1) Most of the omentum, (2) the pyloric half of a largely dilated stomach, (3) the first part and the upper portion of the second part of the duodenum, (4) the right half of the transverse colon starting from the hepatic flexure, and (5) portions of the small intestine (the exact length was not measured). All these organs were tightly packed into the sac and very firmly held at the ring. The parts within the sac were much congested and showed that a certain degree of strangulation was present. It was only with a certain amount of force that the contents could be withdrawn from the sac. On the stomach being pulled down a perforation was found situated on the anterior wall 1 in. from the pylorus and therefore lying within the sac.* The perforation was due to a rupture of a gastric ulcer having all the characteristics of that lesion, and not of ulceration the result of acute strangulation. It was apparently of recent formation. The hernial sac contained pus, the inflammation of the peritoneum having evidently started within the sac and spread to the general peritoneal cavity.

The stomach measured 18 in. in its long diameter, and was greatly dilated. Near its middle was a constriction dividing the organ into two parts. The constriction was due to the hernial ring, so that the pyloric part of the stomach occupied a position within the sac. The transverse colon showed similar constriction bands, one at the hepatic flexure, and the other midway between its two extremities—evidence of their permanent position within the sac.

The right lung, situated at the apex of the right thoracic dome, was small. Its lower margin extended in front to the second rib, and behind to the seventh. On the left it extended beyond the left lateral border of the sternum in its upper part about half an inch. It was about the size of a man's fist. It appeared healthy and functional. The left lung showed compensatory enlargement, as it filled the entire left pleural cavity, the costo-phrenic angle being completely occupied by the lung.

The heart was displaced upwards to the left and backwards, being at a depth of two inches from the posterior surface of the sternum. Between the sternum and the pericardium lay the right lung above, and below this a part of the hernial sac with its contents. The right margin was half an inch interior to the right lateral sternal line and the upper portion reached to the lower border of the first intercostal space on the left side. A diverticulum of the pericardium was found in its posterior aspect which extended for one inch to the right immediately behind the hernial ring. It was attached to the upper surface of the diaphragm, the opening looking to the left. It resembled the thumb portion of a rubber glove.

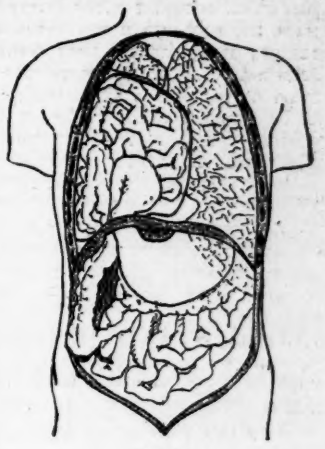
FIG. 2.

The liver was displaced downwards, the right lobe being elongated and resembling a Riedel's lobe; this part extended to the iliac crest with the ascending colon lying in front of it. The left lobe did not extend beyond the left of the mid line. The anterior border was pulled backwards, lying well under the dome of the diaphragm and behind the ring of the hernial sac. The whole organ appeared to have been tilted backwards, downwards, and to the right. It showed early cirrhotic changes. The gall bladder was filled with stones, but none were impacted in the common bile duct.

The kidneys and spleen were in their normal situations; they showed acute congestive changes, but appeared otherwise normal.

Few reported cases of congenital diaphragmatic hernia have been diagnosed during life. The signs and symptoms which would make one suspect that a diaphragmatic hernia was present are:

1. Restricted respiratory movement on one side of the thorax.
2. A tympanitic note on percussion with breath sounds limited in some part of the thorax. If the bowels which occupy the hernial sac contain contents, then no tympanitic note may be obtained.
3. The heart is usually displaced, the displacement, of course, depending on the relationship of the heart to the ring of the hernia.
4. Signs of intestinal obstruction if strangulation of the hernia occurs.
5. Borborygmi may be heard on auscultating the tympanitic ring.
6. The most certain sign is that obtained from *x* ray after a bismuth meal. The bismuth will show the position of the bowel above the level of the diaphragm.

A sign which in this case was of interest and which may be of some diagnostic value was the peculiar attitude the patient adopted. He stood, or sat up in bed, with the body bent well forward and the knees bent. He refused to lie down, stating that the pain was increased when he tried to do so. The attitude appeared to be one which most relieved the tension of the diaphragm.

The first four of the above signs were present in this case. The fact that perforation of the gastric ulcer had occurred within the hernia and that the resulting peritoneal inflammation was at first limited to that surface within the hernia would explain the want of rigidity of the abdominal wall muscles and also why the pain was more thoracic than abdominal in position when the patient was first seen. The free abdominal respiratory movements may also be thus explained. Certainly the clinical picture was not typically that of acute peritonitis resulting from a perforation of a viscus.

In the light of the *post-mortem* appearances, it was evident that had the patient been operated on when first seen the prospects of recovery would have been small. The contents of the sac were so large that it would have

been impossible to keep them from returning when reduced. The size of the ring precluded its obliteration by any method, flap or otherwise. Further, if drainage had been decided on it would have been necessary to drain the pleural cavity or sac (regarding these as identical in this case) as well as the abdomen. That the patient suffered from gall stones, of which there were a large number, added to the complexity of the case. The history suggests that the first event was incarceration of the hernia. The patient had pain four days before admission to hospital with some vomiting and constipation; these symptoms, on the other hand, may have been due to the gall stones. The very acute pain coming on fourteen hours before being seen would correspond to the perforation of the gastric ulcer. It was impossible from the *post-mortem* appearances to say what had been the start of the terminal illness, but they pointed strongly to incarceration and commencing strangulation of the hernia as being the first factor.

When the multiplicity of the pathological findings are considered, it seems extraordinary that the patient should have been able to carry on the active life he had for the previous six months. As a burgher he was constantly in the saddle. The case further emphasizes the fact that patients with congenital diaphragmatic hernia either die in early infancy or live well on towards old age.

As regards the treatment of hernia in this region, it has been found that in cases of strangulation no attempt should be made to repair the opening through the diaphragm, relief of the strangulated gut being all that is justified. The mortality is high.

The position of the opening in congenital diaphragmatic hernia is almost always behind the liver through that portion of the muscle which in the fetus corresponds with the pleuro-peritoneal canal in the posterior part of the diaphragm near the vertebral column. Most frequently the hernia is on the left side, but on whatever side it is situated, if well posterior to the central tendon of the muscle, an embryological explanation can be given, whereas in the case described the position of the ring does not fall into line with what we know of the development of the diaphragm.

The present case, owing to the position of the opening in the diaphragm, and apart from its clinical interest, appears to be an extremely rare abnormality.

INJURIES AND DESTRUCTIVE EFFECTS OF AEROPLANE BOMBS:

WITH SUGGESTIONS ON THE PRECAUTIONS TO BE TAKEN DURING HOSTILE AËRIAL RAIDS.

BY

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AND

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[THE following observations refer only to bombs dropped from aeroplanes. They were made during a period of five months in various parts of France and Belgium antecedent to February, 1915, but their publication at that time was not deemed advisable.]

TYPES OF BOMBS.

The bombs the effects of which were observed were of two kinds:

(*a*) *High Explosive Percussion Bombs.*

The high explosive bombs weigh from 10 to 20 lb., and consist of a metal case ¼ in. thick, filled with high explosive only. It is presumed that no shrapnel bullets are contained in them, as we have never been able to demonstrate such either in the wounds or in the wreckage of property produced. By visiting the spots immediately after the explosions we have been able to secure various pieces of the bombs—for example, the handle, the base, and pieces of the casing of various size, as shown in Fig. 1.

FIG. 1.—Showing various pieces of exploded aeroplane bombs dropped by German aviator.

The destructive effect is due to the high explosive and to the metal case being broken up into fragments of various sizes, which are propelled in all directions at tremendous velocity.

The bombs may be released from the aeroplane by hand, either over the side of the machine or through a hole in the floor of the fuselage, or by a special bomb-dropping device, by means of which the bombs are released by hand levers or foot pedals.

As the bomb leaves the aeroplane a pin is withdrawn, which allows a small metal propeller to unscrew itself; this sets the internal mechanism ready for explosion on contact. As a precautionary measure the mechanism is not set ready for detonation until the bomb has fallen about 200 ft. Fixed steel vanes keep the bombs steady on their downward flight. Sometimes these bombs fail to explode on percussion, and have been found intact.

(*b*) *Incendiary Bombs.*

The incendiary bombs used to set fire to collections of stores, etc., consist of a thin metal casing containing a medium soaked in some highly inflammable substance, such as petrol. A percussion device in the bomb ignites the inflammable contents.

FLIGHT OF BOMB.

Bombs are dropped from aeroplanes usually at a height varying from 4,000 to 7,000 feet. Below this the machine comes well within the danger zone from anti-aircraft guns. The forward speed of the aeroplane determines the first part of the bomb's flight, which will be in a forward direction until gravity asserts itself, and then the course will be directed downwards. But from our experience we venture to make the statement that there is a certain amount of forward deflection, perhaps small, in the whole course of the bomb's flight. Lateral deflection in the bomb's flight may also occur, and this may be due to one of two causes. First, if the wind is across the aeroplane's path some lateral deflection of the bomb's flight must be expected, depending on the wind velocity and the height of the aeroplane from the ground. Secondly, if a bomb is released as the machine is being banked centrifugal action comes into play and will cause some lateral deflection.

A bomb was dropped from an aeroplane at about 6,000 ft. A cross wind was blowing and the bomb fell, as estimated by competent observers, at a spot 200 yards lateral to the aeroplane path.

A bomb was dropped from a height of 6,000 ft. and struck the front of a house in a narrow street. The house was struck at the level of the first floor; to do this the bomb must have had either forward or lateral deflection.

The accuracy of bomb dropping is thus influenced by many factors—for example, height of aeroplane from ground, its air speed, its ground speed, wind velocity, gravity, etc.; thus the chances of obtaining a direct hit on

a particular object, unless large ones, such as a collection of troops or transport, large buildings, massed shipping, etc., are rather small.

When a bomb is dropped it comes rapidly to earth with a peculiar hissing shriek, quite unlike the whistle of a shell. On explosion it sends up a cloud of smoke and débris about 30 ft. high.

INJURIES.

These are much akin to the injuries produced by common high explosive shell. Death or more or less severe injuries may be due to the following causes:

From the Actual Shock of the Explosion.

That is the effect produced on the individual by the disturbance in the air, created by the sudden expansion of the contents of the shell.

(*a*) The shock may actually kill without producing any visible destruction of tissue.

Two civilians were found lying dead 5 ft. from a hole in the street made by a bomb. There was slight frothing at the mouth, but no wounds, fractures, burns, or any visible injuries.

(*b*) The explosion may blow off limbs, or shatter them severely, or cause multiple wounds. The traumatic shock in all these cases is very severe, and many cases never rally.

A number of civilians were standing round one of the Allies' aeroplanes when a bomb, which was being handed up by a mechanic to the observer, fell and for some unexplained reason exploded. Six people were instantly killed. All had compound fractures, some severely shattered limbs, whilst others had the whole or a portion of an extremity blown off. Curiously enough, the mechanic escaped with nothing more than a wound of the forehead, whilst the observer, who was thrown 30 ft. in the air, came down unharmed, except for slight wounds of face and arm, due to small fragments of the bomb. He suffered in no way from shock, and was able to walk into hospital unaided.

A bomb exploded 5 ft. from a Belgian officer. He sustained a compound comminuted fracture of the left leg and two deep wounds on the front of both thighs. The shock was very marked, and he died the same night. On opening up the thigh wounds, no fragments of bombs or shrapnel bullets were found. The wounds were due to explosive effect alone.

A bomb exploded a few feet from the following cases, the injuries received being due to explosive effect: A civilian, aged 40, had a wound exposing the muscles of the neck and trachea, and a compound comminuted fracture of the left leg. Amputation of the leg was performed, but he died shortly afterwards. A boy who had compound fracture of femur and severe shock never rallied, and died the same night.

From Flying Fragments of Bomb.

The pieces into which a bomb bursts are never very large, the largest being 2 in. by 2 in., whilst many are quite small. Persons standing within 30 ft. of the explosion are likely to be injured. Beyond that range the chances of escape are much increased, but a flying fragment may injure severely at 150 ft. from the explosion.

A civilian standing 30 ft. from a bomb explosion received a large wound in the abdominal wall from a flying fragment. Viscera protruded, and he died a few hours after admission to hospital.

A woman, about 20 ft. distant, had a perforating wound of thorax and penetrating wounds of abdomen and right thigh. She died on the way to hospital.

A man, about 40 feet distant, received a penetrating wound of abdomen. No exit wound discovered. He was operated on, but the fragment was not found at the time. He died later of general peritonitis.

A woman, 30 ft. distant, received a flying fragment in the left side of the chest. Further history unknown.

A woman, standing 30 ft. from a bomb explosion, received multiple wounds from small fragments as follows: Small penetrating wounds of left foot, left thigh, right arm, left breast, and left eyelid. A left metatarsal bone was fractured.

At a distance of 50 to 60 ft. from where a bomb exploded flying fragments entered a cellar (many of the Continental cellars, although underground, have part of the door, window, or grating above the street level) and wounded three people—

A woman received a wound on left breast.
A woman received a deep wound of thigh.
A child received a slight wound of breast.

From Burns.

Signs of burning and charring are rarely found alone, and are usually accompanied by other more serious injuries. When present they only occur to those in close proximity to the explosion.

A bomb exploded about 5 ft. from a soldier, shattering his left leg, fracturing the right tibia, cutting his lip and nose, and causing superficial burns all over the body. He died soon after admission.

A soldier in a stooping position a few feet from where a bomb fell had his left buttock blown off and the wound absolutely charred. This case did extremely well

From Fumes.

Although we have no cases amongst our records it is quite possible that the fumes given off at the time of the bomb explosion might have a fatal or stupefying effect on those in the vicinity.

From Wreckage Displaced by Bombs.

The injuries thus received so far have been slight, and have been due to falling stones, bricks, mortar, etc. The usual aeroplane bomb is not sufficiently powerful to so wreck an ordinary house that the wreckage falling would cause severe injuries. Most of the injuries have been slight bruises, and no deaths have been recorded.

From Accidents.

These occur to individuals in their hurry to escape from danger from above.

A bomb fell in the narrow street of a French town, when a woman with a child in her arms (some 50 yards away) made a wild leap for safety, fell down some cellar steps, and crushed her child to death.

From Anti-aircraft Missiles.

During hostile aërial raids the air positively teems with metal from all kinds of anti-aircraft guns, and the danger to curious and ignorant onlookers from falling missiles is very great. It is surprising that so few have been injured from this cause, and the number of escapes have been truly wonderful. The base of a 75 mm. shell, weighing 3¼ lb., came down very close to one of our officers, and had it struck would have caused instant death. The missiles that are likely to return from the air during the defence are:

1. Bullets from rifles and machine guns. These come down with surprising velocity, sufficient to kill or injure severely. Some have been found imbedded in woodwork, and others with their noses turned or flattened, due to the tremendous impact on the ground.
2. Pieces of shell, of varying size, and shrapnel bullets from proper anti-aircraft guns.
3. Bases and pieces of common shell, solid shell, and unexploded shell.

Fig. 2 shows the base of a French 75 mm. shell and a large portion of a shrapnel bursting shell. They came down together with French mitrailleuse bullets in the outskirts of a town during a hostile aërial raid.

FIG. 2.—Showing anti-aircraft missiles, which came down in the outskirts of a town during a hostile aërial raid. *a*, Base of French 75 mm. shell. *b*, Large piece of shrapnel bursting shell.

RANGE OF BOMB FRAGMENTS.

Our observations on the first series of bombs dropped showed that most of the fragments were driven upwards at about an angle of 30 degrees, so that an individual lying flat on the ground in the vicinity would probably escape unhurt. These bombs also made a fairly deep hole in the ground, as a rule about 2½ ft. deep. Latterly the bombs dropped have exploded so that the fragments have been driven along parallel to the ground, as well as upwards to an angle of 60 degrees. Bomb fragments have been found embedded in walls at a distance of 150 ft. from the explosion.

DESTRUCTIVE EFFECTS.

These have been noticed on streets, houses, sheds, sand and shipping:

(*a*) *Streets.*—The hole produced is 2 or 3 ft. wide and 1½ to 2 ft. deep. Windows in the vicinity for-

50 to 100 yards around are shattered. A plate glass window 40 ft. from a bomb explosion showed multiple stellate fractures, a frost-like arborescent appearance being produced. Wooden shutters and doors at 30 ft. distance have been perforated, whilst in others bomb fragments have been found embedded. Pieces have been driven along parallel to the ground in through (Continental) cellar doors and windows, injuring people within. A bomb bursting in the street would send fragments through the ground floor and first floor windows, but not through the masonry. Safety lies in keeping against the wall, indoors on the ground floor, out of the line of windows.

(*b*) *Houses.*—The usual 20 lb. bomb employed from an aeroplane will go through an ordinary roof and explode in the top room. We have not found one which has penetrated further. A wire splinter-proof netting would cause the bomb to explode outside, and only some fragments would probably come through the roof. Sand also acts as a good protective, but its weight precludes its use on most roofs.

A bomb came through the roof of an ordinary dwelling house and exploded in the top room, wrecking everything in it, but no fragments penetrated the floor below.

A bomb struck the projecting ledge of a house roof and burst, dislodging some tiles and bricks, blowing in the windows, damaging property in the upper rooms, and the fragments spent themselves in the street below, killing two soldiers who had taken protection in a doorway. Such doorways and passages afford little protection.

A bomb, with either a forward or lateral deflection, struck the front of a house and destroyed a good deal of the masonry, and wrecked furniture, etc., within. Fortunately no one was injured.

(*c*) *Sheds.*—The glass and wooden roof of a large shed (a hangar) was pierced by a bomb, which must have exploded just after entry. The fragments were driven downwards, perforating in many places a canvas covering, and killing two people below. No others were injured.

(*d*) *Sand.*—We have records of six bombs exploding on a sandy beach. The hole produced is usually 3½ to 4½ ft. wide and 1 to 2 ft. deep. Case fragments are found embedded in the sides of the crater. On explosion a spray of wet sand is carried laterally for a distance of 30 ft. Bags full of sand form an ideal protection on a bomb-proof shelter.

(*e*) *Shipping.*—A bomb fell on a barge, and, exploding, made a hole in it, causing it to sink rapidly.

Precautions to be Taken during Hostile Aërial Raids.

On head quarters being notified of the approach of enemy aircraft, warning signals should be given to the community, such as the firing of a gun, hoisting of a flag on the town hall, blowing of a ship's siren, use of a military rattle, etc. Orders should be given beforehand that all except those connected with anti-aircraft defence must seek cover indoors, preferably in basement cellars, or, failing these, on the ground floors, away from the line of windows. "Get in and get under" is the motto for safety. It must be remembered that it is extremely difficult for the onlooker below to gauge with any accuracy the position of the aeroplane relative to his position on the ground. The danger zones are, as a rule, immediately in front of, and lateral to, the approaching aeroplane; the areas of safety lie directly behind its flight. But it must not be forgotten that a well-banked turn may quickly alter the aeroplane's direction and so place an individual below in the danger area. Fire stations should be notified, and doctors, first-aid crews, and ambulances made ready on telephonic communication. School children should not be sent home from school but congregated on the ground floors out of the line of windows. If people flock into the streets to watch events, they are exposed to as much danger from falling anti-aircraft missiles as from the enemy's bombs, and needless casualties will ensue. On no account must unexploded bombs be handled or touched; a guard should be put over them and the nearest authorities notified. Houses that require to be specially protected should have a splinter-proof netting arranged over, and some feet above, the roof. This would cause the bombs to explode outside the roof, and only a few fragments would probably penetrate the roof. Sand in bags can be used if its weight can be sustained. As hospital ships must at times be in ports which are liable to aërial attacks, we recommend that such ships that have their wards directly under the upper deck should make use of a similar splinter-proof netting. In houses the best protection is afforded by underground cellars, especially those built under the foot-path and not directly under the house. In Continental cellars, which are partly above the street level, people are safe if they keep away from the cellar window, door, or grating, as the case may be. The same applies to the ground-floor room of an ordinary house. Avoid upper rooms, windows, and doorways. In the street, passages and entrances to shops, etc., afford no protection, and are to be avoided. If a passage open at both ends is one's only shelter, it is better to take the centre of it and lie down.

The precautions to be taken in buildings where there are more or less large collections of people, such as factories, schools, works, barracks, etc., depend upon the size and type of the building. When there are upper stories the individuals should be collected on the ground floor, with the same precautions as for a house. When there are no upper stories and the building has a ground floor only—for example, a hangar or some hospitals—those locally in authority should see if there is in the vicinity another building affording protection. If so, arrangements should be made for occupying this on hearing the warning signal, and this should be practised and carried out as for fire drill, to avoid panic, especially so with school children. If no such safety building exists, the best measure to adopt is to build beforehand some type of bomb-proof shelter within the building. We have seen a very good one made in the large shed of a works from the available material present. The sides consisted of tins or drums containing sand or non-inflammable merchandise, the roof was of timber supported by powerful props, and on the top of this were placed bags of sand 1 ft. thick. This is almost certain, we think, to keep out all fragments of a bomb exploding, as it would, just inside the roof of the shed. Provision should be made for the interior lighting of all bomb-proof shelters, as a dark place crowded with people, who may be already in a high state of excitement, is conducive to panic. Inhabitants in towns subject to air raids paste broad strips of paper diagonally over the inside of their windows, thus preventing glass falling outward and injuring people below.

Aeroplanes, as well as airships, can and have been used on many occasions during this war for making aërial attacks by night. We have had the experience of two such enemy raids. A point worth remembering is that on a bright, clear, moonlight night an aeroplane is extremely hard to see, and almost everything is in the enemy's favour. The pilot can see well and cannot be seen; he can fly fairly low and thus make more accuracy in bomb-dropping.

AN APPLIANCE FOR USE IN SEVERE INJURIES OF THE UPPER EXTREMITY.

BY

GILBERT ARNOLD,

Temporary Captain R.A.M.C.

The difficulties in readily dealing in a satisfactory manner with severe gunshot wounds of the upper arm, elbow, and forearm, where there exist infected wounds communicating with a fracture, have led me to devise the splint or supporting apparatus which I am about to describe.

All surgeons engaged in war surgery are familiar with the practical difficulties encountered in the treatment of these cases. Broadly the main difficulties are:

(1) To immobilize the part in such a manner as to secure the fragments of a fractured bone in good position.

(2) To fit such an apparatus as shall, whilst resting and fixing the part in a favourable position, at the same time permit ready access to the wound with the minimum possible disturbance of the limb as a whole during the necessary wound treatment — for these cases require frequent irrigation and dressings.

(3) To fit an apparatus which is comfortable to the patient, and which permits him, if he is in bed, to change his position from time to time without pain.

In regard to (3) some of the appliances and methods one sees in use, whilst perhaps satisfactory from a mechanical point, leave the patient all the time in rela-

tive discomfo-

I employ a rectangular plate about 45 × 38 cm., usually a plate of perforated aluminium 4 to 5 mm. in thickness (*vide* Figs. 1 and 2). This plate, splint, tray, or supporting appliance can be fashioned from other material than

Fig. 1.

aluminium, provided the material selected is non-absorbent, readily cleaned, sufficiently rigid as not to bend in use, and light in weight. Fig. 4 is a drawing of a plate made from sheet vulcanite fibre, set in an aluminium frame to give the necessary stiffness.

Originally I used to fasten the arm to the perforated splint by means of flexible aluminium hooks moulded to the contour of the arm, the hooks being fixed in the plate by screwing on small nuts underneath the plate to their reduced projecting ends. In Fig. 1 a hook of this kind is seen between the thumb and index finger.

Mode of Use.

Figs. 1, 2, and 3 are drawings made from patients. Fig. 1 is that of a compound comminuted fracture at the upper and middle third of the shaft of the humerus, communicating with large discharging wounds on the inner and outer side of the arm. The sketch shows the usual way in which the arm rests upon the splint. It will be noted that one corner of the splint is fitted close into the axilla, and here the upper arm is secured to the plate by means of a fold of gauze passing through holes in the plate on either side of the limb just below the shoulder. Extension is obtained in part by the weight of the limb below the fracture, but is assisted by the tension of the pad and band at the bend of the elbow, which secures the arm to the lower posterior corner of the support. At this point I often employ an elastic band, but frequently a strip of ordinary bandage suffices. The hand and forearm are maintained in a position midway between pronation and supination. As shown in Fig. 2, a cushion in the axilla is interposed between the splint and the thorax, the cushion being kept in position by attachments which pass over the opposite shoulder. The plate and limb together are well slung up, as indicated in the drawings, and in the early stages of very severe injuries the patient should be in bed with the splint in an inclined position resting on a firm pillow. If there is a wound on the surface of the limb towards the plate the latter should be fenestrated at the corresponding area in order to allow the necessary frequent dressings to be done without removing the injured member from its supporting splint.

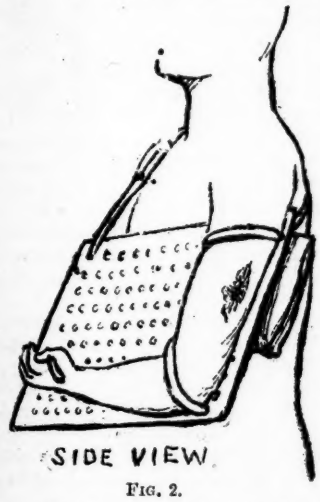


Fig. 2.

In the case of fractures of the forearm with shortening and displacement of the fragments, the splint is applied in the way already described, but extension and counter-extension will be required, and the splint affords an

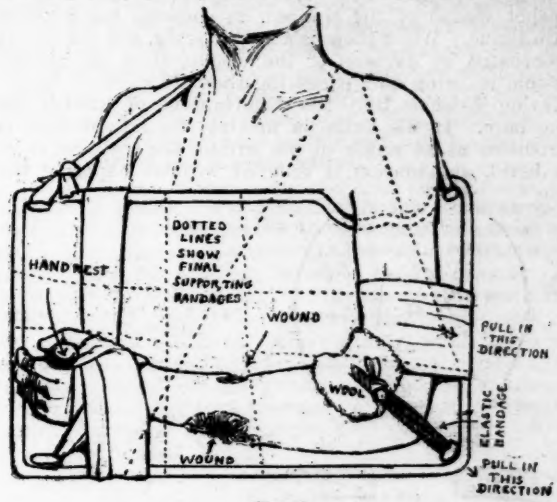


Fig. 3.

efficient and easy means for this. The hand is to be firmly and comfortably attached, using a starch bandage, to the post shown in Figs. 3 and 4, or alternatively a bracelet of gutta-percha fastened to the plate is made to encircle the wrist. The upper arm is then pulled directly backwards, and the elbow backwards and downwards as shown in Fig. 3.

This splint does, in fact, afford a very complete degree of rest to the entire musculature of the upper extremity, and that without being burdensome by any exaggerated restraint imposed, for whilst it provides very perfect immobilization, it opposes little restriction to movements of other parts of the body—a point on which the comfort of the patient depends so much.

I can confidently recommend this simple appliance as an instrument giving—to the patient—great comfort, and—to the surgeon—a great control of the situation. It enables the surgeon to apply correcting forces in any

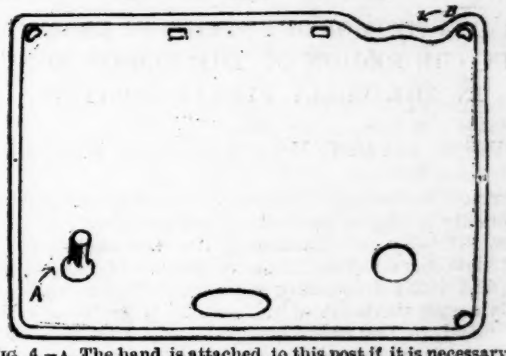


Fig. 4.—A. The hand is attached to this post if it is necessary to make extension on the forearm. B. Fits axilla here.

desired directions to meet the exigencies and special deformities of each particular case, for the margins of the plate and the perforations are so many fulcra for the effective application of power.

I am indebted to that excellent artist, Corporal Bernhard Hugh, Royal Flying Corps, for kindly making the drawings which illustrate this article whilst himself a patient.

The convention of the Cremation Association of America will be held at Cincinnati on August 24th and 25th. Among the questions proposed for discussion is the advisability of adopting an insurance scheme to provide for the incineration of the bodies of deceased members. Dr. Hugo Erichsen of Detroit, who has been president for three years, announces his definitive retirement from that position.

A NOTE ON A SIMPLE METHOD OF REPAIRING DEFECTS OF THE SCALP.

BY

CUTHBERT WALLACE,

CONSULTING SURGEON, EXPEDITIONARY FORCE.

It is now recognized that it is beneficial in many cases of gunshot wound of the cranium to cover up the exposed brain tissue. When there is a loss of scalp, and the loss is accentuated by excision of the wound, it is not always possible to bring the edges together. Lateral tension-relieving incisions have the disadvantage of leaving the bone bare. If the knife, in making the lateral cuts, is introduced at an angle to the surface the scalp is cut on the bevel, and tension is relieved without exposing the bone.

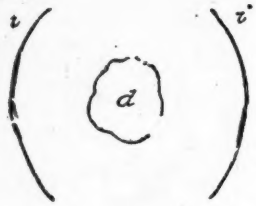


FIG. 1.—*d*, Defect; *i*, *i*, lateral incisions.

FIG. 2.—Cross section of scalp, with incisions made.

FIG. 3. — Flaps brought together.

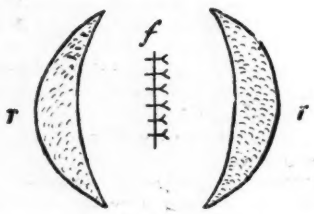


FIG. 4.—*f*, Flaps sutured; *r*, *r*, raw surfaces.

The diagrams explain the method, which is applicable whether a large exploratory scalp flap has been used or not.

A SIMPLE METHOD OF PUTTING UP FRACTURES IN THE REGION OF THE ELBOW-JOINT IN THE FULLY FLEXED POSITION.

BY

LOUIS C. RIVETT, M.A., M.C.CANTAB., F.R.C.S.ENG.

FRACTURES in the region of the elbow-joint are nowadays universally put up in the fully flexed position.

The difficulty in maintaining the arm in this position must have occurred to most surgeons. If bandages are used, the hand frequently slips out of them and hangs limply across the front of the chest. If strapping is used, it is usual to find the whole limb and side of the chest smothered with strapping, and this is most uncomfortable for the patient.

Lately I have treated several cases by a simple, and, I think, a satisfactory method. Two strips of adhesive plaster are required, each about 1 ft. long and from 1½ in. to 2 in. wide. The first strip is used to maintain the forearm fully flexed upon the upper arm. It is so placed as to encircle the arm and forearm just below the fold of the axilla, and immediately above the wrist. This strip in no way interferes with the circulation, as it does not constrict the limb by encircling the whole arm. It should be sufficiently long to overlap about 1 in., and, if applied direct to the skin, it will not tend to slip down in the direction of the elbow.

The second strip is used to support the arm and hand, and is applied to the back of the forearm and hand, extending only as far as the first strip. The other end is then placed over the same shoulder and fixed to the back (somewhat as in Sayre's method of treating fracture of the clavicle). Figs. 1 and 2 will make this clear.

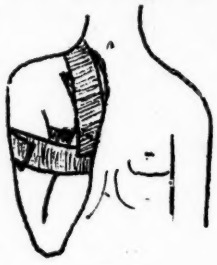


FIG. 1.

FIG. 2.

I have not found any tendency for the strapping to slip, and I am told that the children whom I have treated by this method are quite comfortable.

Dr. Stanley Melville's note points out a further advantage in the use of this over the usual method of putting up similar fractures.

Note by DR. STANLEY MELVILLE, *Radiologist to the Victoria Hospital for Children, Chelsea.*

It is very usual for a patient suffering from fracture in the region of the elbow-joint to present himself for *x*-ray examination with the limb fully flexed and fixed to the chest wall with adhesive strapping, and as likely as not with the elbow carried well across the chest wall. A satisfactory radiogram being impossible under such conditions, the advantages of Mr. Rivett's method were at once evident to myself. It is not necessary to remove or in any way disturb the strapping, as the arm can be swung out quite easily at right angles to the chest, and with absolute comfort to the patient.

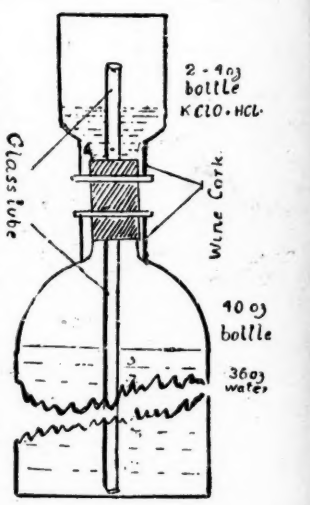
Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

NASCENT IODINE TREATMENT OF TUBERCULOSIS.

THE nascent iodine treatment of tuberculosis having come into some prominence, the following may be of assistance to practitioners and dispensers in the dispensing of an otherwise objectionable and poisonous drug. It almost completely prevents the fumes of chlorine gas from escaping and causing certain symptoms of poisoning.

Take a 40 oz. stoppered bottle and charge with 36 oz. cold water. Prepare a smaller bottle (2 to 4 oz. capacity) with a neck of the same diameter as that of the 40 oz.; choose a sound wine cork which will fit both snugly, perforate for a glass tube, and cut a tube of such a length that, when connected, it will reach to the bottom of the 40 oz. and half the depth of the smaller bottle.



See that the fitting is correct, and that the two bottles can be connected easily and firmly.

Then charge the smaller bottle with 1½ drachms of powdered potassium chlorate; add 3 drachms of pure hydrochloric acid, and rapidly and carefully insert the short limb of the tube, avoiding the entrance of the effervescing mixture into the tube by sloping the apparatus and inverting it. Then plug the cork into the 40 oz. bottle, when gas will at once bubble up through the water. Leave the apparatus for three or more hours, when the reaction will be complete. Wash the residuum from the smaller bottle in the open air (or it may be added to the contents of the 40 oz. if it is desired to use the potassium chloride which remains).

This apparatus is simpler and cheaper than one with two corks and a bent tube. No air release is needed.

Nordrach, Bristol. EDWARD BIGG.

GANGRENOUS APPENDIX IN THE SAC OF A STRANGULATED INGUINAL HERNIA.

S. C., aged 73, was admitted to the County Hospital, Lincoln, on October 29th, 1915, with complete intestinal obstruction, due to a strangulated right inguinal hernia (she had had it for several years, but it had given her very little pain or trouble before this attack). The hernia was small, but very hard and tender. Herniotomy was performed soon after her arrival at the hospital; on opening the sac a few drops of pus were evacuated; they were found to come from the much swollen end of the appendix, which was perforated and quite gangrenous. This was tied and cleaned up, the sac laid fully open, the constricting ring nicked and dilated, and a tiny knuckle of small intestine, which appeared quite healthy though it was very tightly nipped, was returned into the abdominal cavity. As the appendix could not be pulled down any further the wound was extended upwards and outwards, until the junction of the caecum and appendix was visible. The latter (which was nearly six inches long and as thick as an ordinary fountain pen) was tied and cut off near the junction, the hernial sac was tied, cut off, and fixed high up in the canal, and the abdominal wound was carefully sewn up in layers (after the inguinal canal had been sewn up with kangaroo tendon), leaving a small opening with a drainage tube in at the lower end, as there had been suppuration there. The patient made an excellent and uneventful recovery.

E. MANSEL SYMPSON, M.D.Cantab., M.R.C.S.,
Lieut.-Col. R.A.M.C.(T.), 4th Northern General Hospital;
Honorary Surgeon, Lincoln County Hospital.

Reviews.

MILK.

As a bringer of health or of disease milk has received a vast amount of attention during the last few years, from both laymen and scientific workers. A reference to the activity of the National Clean Milk Society was made in the BRITISH MEDICAL JOURNAL of June 3rd, 1916, p. 799; here, too, a note was made on the milk problem in Indian cities. The Medical Research Committee (National Health Insurance) has recently had published an exhaustive monograph[1] on milk in all its hygienic relations, written by Dr. JANET LANE-CLAYPON, that is a veritable mine of information upon the subject, and is stuffed from cover to cover with facts, figures, and views bearing on every aspect of the milk problem. Lists of references to the literature are appended to each chapter, and seem to show that Dr. Lane-Claypon has neglected no available sources of information as to the physical, chemical, physiological, clinical, and economic properties of milk, both pure and contaminated. In addition, there are valuable chapters and tables dealing with such subjects as breast-feeding, the use of dried milk or heated milk for the nourishment of infants, the presence of pathogenic bacteria in butter and cheese, and the like. At the end of the volume are eight appendices on the subject of human milk, milk depôts in England, and other matters. The book is well designed, clearly written, and full of information; it should be in the hands of all persons who are interested in the supply of pure milk, or in its usage without contamination or deterioration. It is a book for scientific workers and administrators primarily, but is so comprehensive in its scope and style as to be well within the grasp of persons without any knowledge of scientific technology. It may therefore be commended most warmly to the attention of a wide and heterogeneous circle of readers.

NEUROLOGY.

THE fourth edition of PURVES STEWART'S admirable book on the *Diagnosis of Nervous Diseases*[2] follows the third after an interval of five years. It has grown a hundred pages in length, and there are many more figures in it than there were. The book is one that no neurologist can do without. It is not a textbook for students, yet the advanced medical student will find in it most illuminating discussions of groups of symptoms met with in everyday practice, with which to supplement his more formal knowledge of neurology. The present war has left its impress on the volume, for the author has been attached as consulting physician to H.M. Forces in the Mediterranean, and has been in a position to make numerous observations on organic war-injuries, to which he devotes a special chapter of 70 pages at the end of his book. We recommend it very strongly to all who have to deal with patients suffering from disorders of the nervous system.

Readers in search of a general introduction to the physiology of the nervous system, or physiological neurology as distinguished from the pathological neurology of nervous disease, may be advised to read *An Introduction to Neurology*,[3] by Professor C. J. HERRICK of Chicago. He deals with the subject on zoological lines, and holds in view the requirements of readers primarily interested in very various subjects—medicine, physiology, psychology, sociology, general education, and comparative anatomy, among others. His text therefore generalizes, and deals in principles rather than their practical applications. The reader finds himself presented with results and deductions rather than facts, and is naturally given little pabulum wherewith he may feed his critical faculties. There is a great deal to interest the medical student or practitioner in the book, which is well written and is illustrated by a number of diagrams and pictures borrowed from the standard works upon the subject.

A translation of Dr. ROBERT BING'S excellent *Textbook of Nervous Diseases*[4] has been made by Dr. C. L. ALLEN, of Los Angeles, and should be welcome to students and practitioners of medicine in search of a readable and straightforward account of a very complicated subject. The book takes the form of thirty lectures, in which the disorders and diseases of the peripheral nerves, spinal cord, and brain are described; special lectures are devoted to such subjects as syphilis of the central nervous system, diseases of the ductless glands, the psychoneuroses, and the like. The various clinical pictures are clearly drawn, and plenty of space is given to such important matters as diagnosis, prognosis, and treatment; the text is not overburdened with microscopical and pathological detail. The illustrations are satisfactory; the translator has done his work well, and he has produced a sound American text. The book may be warmly recommended to those in search of a neurological textbook.

The eighth edition of Professor DANA'S *Textbook of Nervous Diseases*[5] follows seven years after the seventh, which received notice in the BRITISH MEDICAL JOURNAL of May 15th, 1909. The eighth edition is smaller than its immediate predecessor, and shows more evidence of careful compression by its author; it is possible that the pruning-knife has been used even too severely, and that Professor Dana's brief and business-like text, while admirable for the information of the expert in nervous diseases, will fail to exhibit the arresting quality that lays hold of the ordinary medical student's attention and fixes in his mind the minutiae of nervous diseases. The various chapters of the book are arranged on the ordinary lines. At the beginning is a brief introduction to the subject and the methods of examining patients. Chapters on the diseases of the peripheral nerves, the cord, and the brain are followed by excellent descriptions of the various neuroses; exophthalmic goitre is included (Professor Dana misspells the name of its Italian discoverer, Flajani), and described as fundamentally due to "a loss of central nervous control." Professor Dana describes 176 diseases in the

[1] *Milk and its Hygienic Relations.* By Janet E. Lane-Claypon, M.D., D.Sc.Lond. Medical Research Committee Series. London: Longmans, Green, and Co. 1916. (Med. 8vo, pp. 356; illustrated. 7s. 6d. net.)

[2] *The Diagnosis of Nervous Diseases.* By Purves Stewart, C.B., M.D.Edin., F.R.C.P., Temporary Colonel A.M.S. Fourth edition, revised and enlarged. London: E. Arnold. 1916. (Med. 8vo, pp. 593; 285 figures. 18s. net.)

[3] *An Introduction to Neurology.* By C. Judson Herrick, Professor of Neurology in the University of Chicago. Philadelphia and London: W. B. Saunders Co. 1916. (Post 8vo, pp. 355; 137 figures. 7s. 6d. net.)

[4] *A Textbook of Nervous Diseases for Students and Practising Physicians, in Thirty Lectures.* By R. Bing, Dozent for Neurology at the University of Basel. Only authorized translation by C. L. Allen, M.D., Los Angeles, California. London: W. Heinemann. 1916. (Sup. roy. 8vo, pp. 495; 111 figures 21s. net.)

[5] *Textbook of Nervous Diseases, for the Use of Students and Practitioners of Medicine.* By C. L. Dana, A.M., M.D., LL.D. Bristol: J. Wright and Sons, Ltd. 1916. (Med. 8vo, pp. 642; 4 plates, 258 figures. 21s. net.)

volume, adding that 66 of them are common, 110 rare. The text is well illustrated. The author is a neurologist and psychologist of great practical experience, and the book may be consulted with advantage by senior students and by practitioners of medicine.

That the term "spasmodic asthma" serves in practice to cover a number of different clinical entities is a fact with which every practitioner of medicine must be familiar. Dr. Berkart has recently published a small book[6] in which he seeks to differentiate as "nervous asthma" one single variety of paroxysmal dyspnoea. He holds that in "nervous asthma" there exists at the time no mechanical obstacle (such as mucus or muscular spasm) in the air passages. The patient gives a history of rickets, and suffers from an endogenous neuropathy or functional disease of the central nervous system that is generally inherited, most frequently on the mother's side. The treatment should consist, in the case of children, in plain diet, a healthy life, and the avoidance of coddling. In all cases the so-called asthma cures should be used as little as possible; the attempt should be made to strengthen the patient's debilitated nervous system, and to give him something beyond his own sufferings to think about. Operations on the nose in these cases are of more than doubtful benefit. Dr. Berkart's book is well worthy of study by those who have to deal with that protean disorder asthma.

NOTES ON BOOKS.

The seventeenth volume of *The Johns Hopkins Hospital Reports*,[7] appearing some five years after its immediate predecessor, contains eight original papers. Several of these have already received notice in the pages of the British Medical Journal, and all are contributions of real value to medicine, physiology, or pathology. The Johns Hopkins Hospital is to be congratulated upon the excellence of the work it continues to produce. The seventeen volumes of the *Reports* form a *monumentum ære perennius* of which any scientific institution might well be proud.

Mr. Preston's guide to the Roller Bandage[8] is a complement to his booklet on the Triangular Bandage, already issued. Both have been written as guides to students of ambulance work, and form a very complete guide to the bandages commonly used in first aid to the injured and home nursing. The text is brief and clear; the line illustrations are excellent. Mr. Preston's little books should have a large sale; they deserve it.

In the course of some 149 pages, many of which are largely taken up by diagrams and illustrations, the authors of a *Vade Mecum d'électrodiagnostic et de radiodiagnostic*[9] endeavour, apparently, to cover the whole ground. Three main divisions are made. The first deals with electrodiagnosis; for instance, the electrical reactions of nerves and muscles, normal and pathological, electric diagnosis in gynaecology, the electro-cardiograph, and so on. The second part is devoted to the localization of projectiles; whilst the third part—in some 50 pages—professes to cover the whole ground of *x*-ray diagnosis. It is difficult to write a notice, or criticism, of a book of this description seriously; it is equally difficult to understand the authors' attitude in compiling such a book. It is stated in the preface that the intention is to appeal to electricians to jog their memories, and to medical men to indicate the precise information they may expect to get from electrical or *x*-ray diagnostic methods. If this be the sole intention, then perhaps the authors have succeeded; but *cui bono?* Page succeeds page of mere statement. All *x*-ray workers, and many surgeons, know something as to the *x*-ray possibilities in, say, the diagnosis of kidney and ureteral stone. All know the difficulties, the pitfalls, the many precautions which have to be taken in making the examination, the still greater care which has to be exercised in interpretation. How can all this be dealt with in a manner to be of any use in a book which dismisses the whole subject in a little over one page, in about 300 words? As a guide to a student going up for an examination, for the purpose of refreshing his memory by a series of headings as to the possibilities of a subject, this sort of thing may be of value; as a serious attempt to fill a blank in medicine or surgery it is not.

The title of Miss Thurstan's book, *The People who Run*,[10] is a literal translation of the Russian word for refugees. When in the summer and autumn of 1915 the Germans overran Poland and advanced into Russia, a large number of persons, country peasants and town dwellers, fled eastward, by train, by cart, many of them on foot. Their numbers are variously estimated at from three and a half to six and a half millions of all ages and many races, and the book gives some account of the efforts made to feed and house them, and to settle those who knew anything of agriculture on the land. The people found their way first to the big towns, and the work of collecting and distributing them was very difficult. Many of them had grown apathetic, most of them were indifferent to sanitary considerations, and epidemic diseases, especially measles, were rife. Gradually some sort of order was introduced, and in this some towns were much more successful than others. Kazan seems to have done best, but it is far in the interior, and the first sorting and the worst misfortunes had happened before the refugees reached it. The university students have done very well here. The "Great Britain and Poland Fund" sends money direct to the Russo-Asiatic Bank in Petrograd, but Miss Thurstan appeals for more volunteers from this country to give personal service. The offices of the fund are at 36, King Street, Covent Garden, London.

[6] *The Pathology and Treatment of the So-called Nervous Asthma.* By J. B. Berkart, M.D. London: H. Milford, Oxford University Press. 1915. (Demy 8vo, pp. 54. 2s. 6d. net.)

[7] *The Johns Hopkins Hospital Reports.* Volume xvii. Baltimore: The Johns Hopkins Press. 1916. (Sup. roy. 8vo, pp. 586; illustrated.)

[8] *The Roller Bandage.* By H. M. Preston. With an introduction by J. Cantlie, M.A., M.B., F.R.C.S. London: T. Fisher Unwin, Ltd., and J. Bale, Sons, and Danielsson, Ltd. 1916. (Fcap. 8vo, pp. 122; 161 figures. 1s.)

[9] *Vade Mecum d'électrodiagnostic et de radiodiagnostic.* Par A. Lucas, M. Boll, et L. Mallet. Paris: J. B. Baillière et Fils. 1916. (Cr. 8vo, pp. 152; 55 figures. Fr.2.50.)

[10] *The People Who Run. Being the Tragedy of the Refugees in Russia.* By Violetta Thurstan. London and New York: G. P. Putnam's Sons. 1916. (Cr. 8vo, pp. 184. 2s. 6d. net.)

THE MOVEMENT FOR THE STATE REGISTRATION OF NURSES: ITS PRESENT POSITION.

There was published in this Journal in 1909* an account of the history, progress, and present position of the movement for the State registration of nurses. In that article an account was given of the chequered history of the movement for nurses' registration from October, 1887, when the subject was brought forward by the late Sir Andrew Clark; it also gave an account of the formation of the Royal British Nurses' Association in 1887, and of the Society for the State Registration of Trained Nurses in 1902, and of the separate bills brought before Parliament by each of these organizations.

In 1895, at the annual meeting in London, the British Medical Association unanimously adopted a resolution expressing the opinion that it was expedient that an Act of Parliament should as soon as possible be passed for the registration of medical, surgical, and obstetric nurses, and in 1904 the Annual Representative Meeting at Oxford adopted by a large majority a resolution approving the principle of the registration of nurses.

In 1905 application was made to the Board of Trade "for a licence of incorporation to a society named the Society for Promoting the Higher Education and Training of Nurses," all the applicants being laymen of influence. They held that as legislation for the State registration of nurses could not be looked for at any early date, something should be done to improve the organization of nursing. To this end they formed themselves into an association, whose objects, as stated in the articles, were:

1. To promote the higher education and training of nurses.
2. To promote unity of curriculum in the training of persons intended for the nursing profession.
3. To recognize approved training schools.
4. To grant certificates of proficiency in nursing to persons who have passed prescribed examinations after training, and to grant certificates of training and proficiency in nursing to persons who have trained in recognized schools, and have passed prescribed examinations, provided that the society shall not grant titles or diplomas.

This application was opposed by the British Medical Association, the British Gynaecological Society, the Royal College of Surgeons of Ireland, the Royal British Nurses'

* British Medical Journal, vol. i, 1909, p. 417, and vol. ii, 1909 p. 1632.

Association, the Society for the State Registration of Trained Nurses, the Matrons' Council, the League of St. Bartholomew's Hospital Nurses, the Scottish Committee for Promoting the State Registration of Trained Nurses, the Irish Nurses' Association, the Registered Nurses' Society, Metropolitan Infirmary Matrons, the Central Hospital Council for London, and the London Hospital Nursing Staff, on the ground that

> The time had long passed when private persons should be allowed to group themselves together to carry out State duties. The medical profession was prepared to accept a system of registration which would supply it with the means of recognizing who was a properly trained nurse, but it would only accept State registration and not pseudo-registration by a private body, more especially one which consisted of laymen only.

On May 5th, 1905, the Board of Trade heard these objectors, and, on June 7th, informed them that the promoters of the proposal had requested consideration of their application to be deferred until the bills before Parliament had been disposed of.

In this same year, 1905, a Select Committee of the House of Commons, appointed in the previous year, reported on the subject, and recommended that

> A register should be kept by a central body appointed by the State, consisting of representatives of the medical profession, of training schools for nurses, of the public, and of matrons and nurses. This body should decide what persons should be admitted to the register and what evidence of training should be required. That there should be a separate register for registered asylum nurses; and that nursing homes should be registered.

In the same year the British Medical Association referred the subject to Divisions for their consideration, and in 1906 the Representative Meeting, held in London, adopted by 90 votes to 3 the following resolution:

> The meeting approves of the recommendation of the Parliamentary Select Committee that there should be State registration of nurses, and is of opinion that on any central council or board appointed the medical profession and the nursing profession should be adequately and directly represented, and that the representation of the medical profession on the Central Nursing Board should be at least one-half of the number of the members of that body.

The bills already referred to were introduced in the House of Commons in 1907 and the following year without making any material progress, but in 1908 the bill promoted by the Society for the State Registration of Nurses was introduced in the House of Lords, where it was passed, and was sent down to the House of Commons in November. This bill met the wishes of the British Medical Association.

It seemed absurd that separate bills should be promoted in Parliament, not materially differing from one another in principle, by different nurses' organizations; and a conference, convened by Lord Ampthill and others, was held on June 28th, 1909. It was attended by delegates of the Royal British Nurses' Association, the Society for the State Registration of Nurses, and the Society for Promoting the Registration of Nurses in Scotland, which had prepared a bill, introduced in March, 1909, for the registration of nurses in Scotland. This conference came to the following resolutions after two sittings (second sitting July 26th, 1909):

1. That State recognition can be satisfactorily carried out only by a single portal system for the United Kingdom, provided that the several parts of the United Kingdom be adequately represented, and that the principle of administrative decentralization be not necessarily excluded.
2. That under a single portal system nurses should be admitted to the register only after:

   (*a*) A three years' course of training with a definite curriculum prescribed by a Central Board conducted in recognized hospital nursing schools;

   (*b*) Having passed a uniform State examination conducted by examiners appointed by and under the supervision of a Central Board at suitable centres throughout the kingdom.

The conference then adjourned, and was resumed on January 25th, 1910, meeting by permission of the British Medical Association in the council hall of the Association. Meantime, however, other organizations had joined the conference, and in 1910 eight associations were represented, namely, the British Medical Association, the Matrons' Council of Great Britain and Ireland, the Royal British Nurses' Association, the Society for the State Registration of Trained Nurses, the Fever Nurses' Association, the Association for Promoting the Registration of Nurses in Scotland, the Scottish Nurses' Association, the Irish Nurses' Association. This conference held several sittings, at which the resolutions of the previous June and July were reaffirmed, the various bills referred to were discussed, and agreement was come to on principles; details were then worked out, so that before the last sitting a single bill had been drafted, and finally the conference resolved itself into a central committee, with Lord Ampthill as chairman, and with honorary secretaries and treasurer, for the purpose of promoting the passage of the bill through Parliament.

This bill—the Nurses' Registration Bill—was introduced in the House of Commons on March 1st, 1910, by Mr. Munro-Ferguson; it was reintroduced on February 27th, 1911, March 23rd, 1912, and March 18th, 1913, by Mr. Munro-Ferguson, and when he was appointed Governor-General of the Commonwealth of Australia, Dr. Chapple took charge of the bill, which he introduced on March 3rd, 1914. The introduction was opposed, and on a division 311 voted for the bill and 82 against.

This bill provided for the setting up of a general council for the register of nurses in the United Kingdom to form a register of nurses whose course of training and examinations it would regulate and supervise. The council would appoint examiners and inspectors, publish the register annually, and would be empowered to take proceedings against persons guilty of offences under the Act. The bill would give power to decide upon the suspension or removal from the register of the name of any nurse for any breach of the rules or for disgraceful conduct. The council would have power to recognize hospitals or institutions as approved training schools for nurses. Besides the general register of women nurses, the bill provided for a supplementary register of male nurses and a supplementary register of asylum nurses. It also made provision for the admission to the register of persons holding a certificate of training from institutions approved by the council or under the Local Government Board, or certificates from the Admiralty or the Royal Army Medical Corps, or producing evidence satisfactory to the council of training and of having been three years in *bona fide* practice as a nurse or employed as a nurse in a naval or military hospital.

The council would consist of twenty-one persons, three appointed by the Privy Council (one a woman), three medical practitioners appointed by the Local Government Board (one for each division of the kingdom), three medical practitioners appointed by the British Medical Association (one resident in England, one in Scotland, and one in Ireland), one medical practitioner appointed by the Medico-Psychological Association, one medical practitioner appointed by the fever hospitals recognized as training schools, eight registered women nurses (to be elected as direct representatives by the nurses on the register), one registered medical practitioner or registered male nurse (to be elected as a direct representative of the registered male nurses), one registered mental nurse (to be elected as a direct representative of the registered mental nurses). The title of "registered nurse" would be protected, and the bill provided penalties for its improper use.

It will be noted that throughout all the proceedings, culminating in the production of a new bill, the British Medical Association, in the person of its delegation of five members to the Conference and the Central Committee which the Conference appointed, took a foremost part.

In these circumstances an easy passage of the bill through Parliament might well have been hoped for, but the party that has always opposed registration, if not large in numbers, was strong in influence, and year after year blocked the bill, aided therein by the increasing pressure of Government business.

A large deputation representing all the societies affiliated to the Central Committee, and including representatives of the National Council of Trained Nurses of Great Britain and Ireland, and the National Union of Women Workers of Great Britain and Ireland, waited on the Prime Minister on April 28th, 1913. It was introduced by Dr. Chapple. On this occasion Sir Victor Horsley was spokesman for the British Medical Association. Later, for a similar purpose, to ask for Government facilities, a petition was presented to Mr. Asquith (July, 1914). But, owing to the pressure of public affairs, the Government could not undertake to father a bill unless it was practically an agreed measure.

On this situation the war burst, and the nursing profession, like the medical profession, dropped all controversial subjects in the preparations to meet the national emergency that immediately opened before them; but the question of nurses was, after seventeen months of war, made acute by the action of the Hon. Arthur Stanley, Chairman of the Joint War Committee of the Order of St. John and the British Red Cross Society, in launching a scheme for a college of nursing for the organization and governance of the nursing profession. The Central Committee, a fortnight after the issue of this letter, met in the Council Chamber of the British Medical Association and agreed to ask Mr. Stanley to receive a deputation from the Committee seeking information as to the nature of his proposals. There was thus initiated a series of interviews and conferences with Mr. Stanley and his advisers and supporters.

In the course of discussion a number of amendments were accepted by the representatives of the proposed nursing college. The chief of these provides for the appointment of the first council by the Privy Council, the Local Government Board, the British Medical Association, the Medico-Psychological Association, the nurse training schools, the Central Committee, and the Nursing College, in stated proportions, and for the admission to the register of nurses who can produce satisfactory evidence of training; after two years persons claiming registration must have had training under a definite curriculum, prescribed by the council, in the wards of a hospital or hospitals approved by the council. The proposal to insert a provision enacting the direct representation of nurses on the council does not appear to have been accepted. From the brief discussion at the Annual Representative Meeting (SUPPLEMENT, August 5th, p. 53) it will be seen that hopes are entertained that eventually an agreed bill may be evolved, and Dr. Verrall stated that the College of Nursing and the British Medical Association were agreed that there should be registration of nurses on lines which the nurses themselves could accept and approve. The Representative Body instructed the Council to consider the possibility of establishing by means of the proposed bill the general principle desired by the British Medical Association in respect to the State registration of nurses and to advise whether the Association would be justified in supporting the bill.

WAR PENSIONS AND GRANTS.

THE Parliamentary Secretary to the Local Government Board stated on August 14th, in reply to questions in the House of Commons, that he and the Vice Chairman of the War Pensions Statutory Committee had had an interview with the Lord Mayor of Liverpool, and that provisional arrangements had been made for a conference towards the end of September between the War Pensions Statutory Committee and the National Committee representing mayors and provosts throughout the country. If, however, it was found possible to get the committee together before that date, the Local Government Board would welcome an earlier conference. The National Committee is appointed to look after the local interests of municipalities and county councils. It desires especially to secure assurances that all supplementary pensions, grants, and allowances to disabled men and to widows, orphans, and dependants shall be borne by the State, and that in the distribution of these Government moneys by the War Pensions Statutory Committee there shall be no interference with the right of individuals in localities to make gifts in their discretion. It is stated that the National Committee find it necessary to take time to communicate with the different interests concerned, and to receive schemes and suggestions. The amount paid out by the War Pensions Statutory Committee to local committees on account of supplementary pensions, grants, and other allowances down to August 12th was £220,394.

Regulations.

The War Pensions Statutory Committee has issued "draft regulations (Part I) for grants to supplement pensions, grants, and separation allowances payable out of public funds and for other grants and allowances."*

* H.M. Stationery Office. To be obtained through any bookseller (Cd. 8316). Price 1d.

These regulations contain a number of definitions:

State pension means any pension in respect of disablement or death during the present war payable out of public funds to a disabled officer, sailor or soldier, or to his widow or dependant, and in the case of a widow or dependant it includes any pension or compassionate allowance in respect of a child but not a State educational allowance.

State educational allowance means an allowance granted out of public funds in aid of the education of an officer's child.

Supplementary pension means an allowance awarded by the Statutory Committee out of funds at its disposal in cases in which owing to exceptional circumstances the State pension appears to be inadequate.

Exceptional circumstances are defined as follows:

"Circumstances where the disproportion between the State pension, together with earnings or earning capacity and 'other income' on the one hand, and the *proportion* hereinafter specified of the 'pre-war income,' or 'pre-war dependence,' earnings and 'other income' on the other hand, involves special hardship—viz.:

(*a*) Permanent ill health (mental or physical) of the beneficiary or his or her incapacity for work.
(*b*) In the case of a widow, the fact of there being young children or an invalid child.
(*c*) In the case of dependants, their number.
(*d*) In the case of a totally disabled man, the fact of his requiring regular medical attendance and special care.
(*e*) Any other circumstances causing special hardship."

Pre-war income means the amount of average weekly earnings or salary received by the man, the regular net earnings of the wife, and any other member of the household eligible as beneficiaries, and "other income."

Other income means contributions from members of the family, or from tenants or lodgers in excess of the expenditure on them, and income from property or investments.

Pre-war dependence means the value of the support afforded to a dependant by an officer, sailor or soldier during the year preceding mobilization or enlistment in excess of the expenditure incurred on his account.

OFFICERS: SUPPLEMENTARY PENSIONS.

Widows.—Where, owing to "exceptional circumstances," the pension payable out of public funds to the widow of an officer seems to the Statutory Committee to be inadequate, a supplementary pension may be granted of such amount as when added to the State pension (excluding any educational allowance) earnings or earning capacity and "other income" shall not exceed in the case of a widow with no children 50 per cent. of the "pre-war income," or, in the case of a widow with children, 66.6 per cent. of the "pre-war income." In no case shall the supplementary pension when added to the State pension, earnings or earning capacity and "other income," make up a total in excess of £150 a year.

Dependants.—Where owing to "exceptional circumstances" the pension payable out of public funds to a mother or father largely dependent upon the deceased officer seems to the Statutory Committee to be inadequate, a supplementary pension may be granted of such amount as when added to the State pension, earning capacity, and "other income," shall not exceed 80 per cent. of the "pre-war dependence" or a sum of £112 10s. a year. Similarly in the case of sisters a supplementary pension may be given of such amount as when added to the State pension, earning capacity, and "other income," shall not exceed 66.6 per cent. of the "pre-war dependence," earning capacity and other income, or a sum of £75 a year, or where there are two or more sisters of £112 10s. a year.

Disabled Officers.—Where owing to "exceptional circumstances" the pension payable out of public funds to a married officer retired from service on account of total disablement seems to the Statutory Committee to be inadequate, a supplementary pension may be granted in respect of each of his children not exceeding £24 a year, provided that the amount of any such supplementary pension when added to the officer's State pension, earnings and "other income," shall not exceed the "pre-war income" of the beneficiaries, or in any case the sum of £187 10s. a year. In the case of an officer partially disabled a supplementary pension for each child may be granted of a sum not exceeding £20 a year, and the amount of any such supplementary pension, when added to the officer's State pension, earnings or earning capacity and "other income," shall not exceed the "pre-war income," or in any case the sum of £187 10s.

Disability from Disease.—A supplementary pension may also be given to a married officer retired in consequence of the present war and unfit for further service on account of disability not caused but aggravated by service.

General Conditions.—No supplementary pension will be granted in the first instance to a widow or dependant for a longer period than one year, and to a disabled man for a longer period than six months. At the end of the period the circumstances of the case will be reviewed by the local committee with the object of recommending whether such pension should be continued with or without modification.

These draft regulations are in force, but will be the subject of discussion at the conference between the Central War Pensions (Statutory) Committee and the National Committee of municipal authorities which it is now announced will be held on September 25th.

British Medical Journal.

SATURDAY, AUGUST 19th, 1916.

A VOICE FROM THE DEAD.

On August 15th we received a letter written by Sir Victor Horsley from the front, Mesopotamia, on July 5th, 1916—that is to say, some ten days before his death. He endorsed it to show that he did not wish it to be published as it stood, but that the information it contained was not confidential and was placed at the disposal of the Editor of this Journal. We feel, therefore, free to reproduce the facts and opinions therein expressed. The three main points of the letter are: first, that it was written in order that the case of the responsible medical officers in Mesopotamia should not be prejudiced, as he feared it might be, through the report of the Vincent Commission; secondly, that the appalling failures in the medical arrangements in Mesopotamia were due to the utterly defective transport; and, thirdly, that the failure was bound up with the question of the present extremely unsatisfactory relation between the financial department of the Indian Government and the medical services.

With regard to the first point some little explanation is necessary. Early this year the information in private letters from officers serving in Mesopotamia which had reached this country produced a very unfavourable impression amounting to a belief that a serious breakdown had occurred and was not being remedied. The Government of India, possibly in view of the debate in the House of Commons on the Army Estimates which was expected and in fact took place on March 14th, appointed a scratch commission to go to Mesopotamia and report. It consisted of Sir William Vincent, a retired member of the Indian Civil Service with judicial experience, and Major-General Bingley, an Indian staff officer recently appointed Quartermaster-General of the Army in India. Afterwards Mr. Ridsdale, a London business man who had done admirable work on the British Red Cross Committee in London, and who had gone to Egypt as its commissioner, was asked to go on to India and Mesopotamia and join the commission. He, however, arrived at Basra, the Mesopotamian base, after Sir William Vincent and General Bingley had completed the taking of the main evidence.

Sir Victor Horsley stated in his letter that last March the Commander-in-Chief in India told him that he had appointed a "medical commission." This turned out to be this commission of three. The public will be able to estimate the value of the findings of this "medical commission" consisting of members possessing no medical knowledge and one of them an officer who can hardly fail to have been biassed in favour of the department which it is now admitted has been the sole cause of the breakdown—that is to say, of the department responsible for transport. Can the absurdity of such a mode of procedure fail to strike any thinking man? Were a commission to be appointed to inquire into a failure in judicial procedure would want of training in law be a qualification for serving? In a public inquiry into a failure in naval operations would ignorance of seamanship be a necessary qualification? In adjudicating on a dispute between capital and labour would a want of experience of labour conditions be a reason for the choice of the adjudicators? Must it ever be in the case of medical matters that only those who know nothing about them should be appointed judges? But this is what first the Government of India and now the Imperial Parliament has done.

The Secretary of State for India stated on August 14th that the report of this Indian (Vincent) or "medical" commission is not to be published, but is to be submitted to the Statutory Commission set up by the special Act of Parliament passed at the beginning of this month with Lord George Hamilton, a former Secretary of State for India, as chairman. It consists, in addition to the chairman, of five members of Parliament, a sailor, and a soldier. It has power to enforce the attendance of witnesses, to examine them on oath and to compel the production of documents, and may delegate any two of its members to make inquiries and to take evidence abroad. Parliament, therefore, intends that it shall make a very thorough inquiry. Its reference is wide, but it is instructed to give its first attention to questions affecting the provision for the sick and wounded, and to report the results of its inquiry on these matters as soon as they are completed.

Nevertheless, though its first duty is to inquire into medical matters, it contains no medical member.

When considering allegations of defects in medical arrangements of a military force the distinction between the administrative and the executive must constantly be kept in mind. The senior administrative medical officers are responsible for the general medical arrangements, the provision of drugs and medical appliances, the establishment of hospitals, and the proper utilization of transport, which is provided by other military departments. With regard to these matters we are not in this country at present in a position to form any definite opinion, but it should be remembered, as we pointed out recently, that under the system by which the army is administered the Medical Service does not supply its own transport. It is, in fact, responsible only for personnel—surgeons, orderlies, and nurses—and for the supply of drugs. It must get its transport, trains, and ambulances on the line of communication, hospital ships and barges from other army departments, and its responsibility only begins after the transport has been provided. As to the work of the executive officers, the medical officers actually engaged in the treatment of the sick and wounded and in minimizing their sufferings during the purgatory of their transport down the Tigris, there is only one opinion expressed by all the officers and men who have passed through their hands—namely, that they have worked in the most splendid way, entirely forgetful of self, constantly striving not to be discouraged by the want of drugs and appliances, the absence of anticholera outfits, or the need to give an intravenous saline injection out of a teapot—deficiencies all due, as Sir Victor Horsley wrote from Amara on June 7th, to "financial terrorism in times of peace." What has been said, and is being said, by returned soldiers is fully borne out by the statement made in the House of Lords on August 15th by the Under Secretary of State for India.

With regard to Sir Victor Horsley's second point—

the total failure of the transport arrangements—he wrote that the whole of the terrible failures in Mesopotamia "are due to the non-provision of transport. There never has been in this country adequate transport for food, and there never (until March, when our solitary hospital steamer arrived) has been any medical transport whatever; nothing but the foulest store barges and steamers used on their return journey to the base to carry the sick and wounded."

Information from other independent sources in our possession proves that he rather understated than overstated the case, and there is now no attempt on the part of the Government of India or of the War Office to deny the truth of the allegations.

It is disquieting to be told, as the country was told last week by the Secretary of State for War, that, though installations for sterilizing water had been provided on many of the vessels already on the spot, they are only now being fitted to the remainder, that filter barges are only now being sent, and that water supply tanks on various points on the river are only now being provided. He added that on all new boats ordered in the United Kingdom arrangements for securing an adequate supply of proper drinking water have been made, but it must have been known to the Intelligence Department of the Government of India before even the first part of the expedition started that the river water was not safe, and that if the troops drank it unfiltered or unsterilized, cholera, diarrhoea, and dysentery would ensue—as they have.

The peculiar conditions of the navigation of the Tigris and Euphrates, shallow rivers with channels constantly changing, and requiring special types of boats, do not appear to have been appreciated by the Government of India or the military department responsible for transport—the Quartermaster-General's department. Suitable boats were not available in India, and perhaps the most damning proof of incompetence and want of foresight is the fact that the necessary hospital ships and barges are now still under construction in this country. Mr. Asquith stated on July 18th that two inquiries into transport in Mesopotamia had been made, one into the river navigation, and the other by an officer sent out by the War Office in March to inquire into the questions not only of river but of railway transport, the facilities for it, and the means of accelerating its completion.

The very guarded answers made by the Secretaries of State for War and for India to questions in the House of Commons within the last few days as to whether the arrangements for the supply of medical necessaries and suitable drinking water for the troops engaged in the Mesopotamia expedition are now adequate are tantamount to admissions that the arrangements are still far from satisfactory. Mr. Lloyd George stated, on July 20th, that the Army Council had become responsible for transport and supplies, as well as for directing operations, and on August 9th he said that all demands for drugs, medicine, bandages, and other medical appliances had been supplied, and that, as the general officer commanding had repeatedly been told to ask for all he wanted, the Army Council was satisfied that sufficient supplies were now available on the spot. We are not sure what meaning is to be attached to the phrase "on the spot." If it refers to the base at Basra, it does not necessarily imply any great improvement on the conditions existing three or four months ago, for it is admitted on all hands that the great difficulty has been transport.

We are not at present in a position to discuss Sir Victor Horsley's third point—namely, the unsatisfactory relations between the Finance Department of the Government of India and the Indian Medical Service. The Statutory Commission which has now begun its inquiry may throw much light on the matter, but we are rather given to understand that the cheeseparing policy of the Finance Department is not exercised against the medical services only, but that every branch of the armies in India suffers from the same cause. The story of the Mesopotamia expedition is not calculated to remove this impression. It was undertaken with a very small force, insufficiently provided and without transport either for moving supplies or for evacuating the wounded, and apparently without any adequate machinery for supplying the troops with safe drinking water. In consequence of the resistance encountered, the force had to be largely increased, but the Government of India did not rise to the occasion. What has happened seems to prove that the task was beyond its resources or its administrative capacity.

THE CONTROL OF EPIDEMIC INFANTILE PARALYSIS.

THE severe epidemic of infantile paralysis—or acute anterior poliomyelitis, to give the disease a more descriptive title—that now prevails in New York has not unnaturally given rise to a certain degree of anxiety in our own country also. During the last two months this epidemic has caused the death of some 1,400 children in New York, the mortality being about 25 per cent.; comparatively few adults have been attacked. Quarantine regulations are now being widely enforced in the neighbouring districts, and children under 16 years of age, we read in the *Times*, are forbidden to travel, to the vast inconvenience of holiday-makers. The public health authorities in New York are only too familiar with epidemic infantile paralysis, for the disease is always present and always more or less active in that cosmopolitan town. They are endeavouring to limit the epidemic by the isolation or quarantine of the most susceptible part of the population—that is to say, of the children. No more effectual way of dealing with the situation is known.

The disease is one that has been studied with great success during the last few years in America, more particularly by Flexner and his pupils, to whom we owe many of the recent discoveries made as to its etiology and the way in which it may be communicated from one person to another. The great advances made in this regard during the last five or six years may perhaps be shown by a brief history of the disease. It was first isolated as a distinct entity from the mixed mass of paralyses affecting children by von Heine in 1840, receiving the name "spinal paralysis of children"; naturally there could be no exact knowledge of its pathological anatomy at this early date. Two or three decades later Prévost and Vulpian, Charcot and Joffroy, and others described accurately the microscopical lesions that could be found in the spinal cords of patients dying of the disease. In 1890 Medin, taught by the study of a Swedish epidemic of infantile paralysis, extended our knowledge of its various clinical types, particularly in the symptomatology of their initial stages. Further advances were made by Wickman in 1905 and the

succeeding years, particularly so far as the epidemiology of the disease is concerned. Many other physicians and pathologists could be mentioned as having cleared up various obscure points in connexion with infantile paralysis, or, as it is sometimes termed, Heine-Medin's disease, or the Heine-Medin-Wickman disease; its bacterial cause was looked for with great persistence, and between the years 1898 and 1907 was identified by a number of observers, quite wrongly, with various cocci cultivated from the cerebro-spinal fluid of patients who had or had died of the disease. Fuller experience, however, proved that errors had been made here, and in 1911 Römer summed the matter up correctly when he said that the true bacterial cause of the disease was still unknown. Both cultural experiments and experiments on animals had failed to reveal it. Yet the seasonal and epidemic incidence of infantile paralysis and the inflammatory character of the lesions observed in it *post mortem* made it certain that some living and transmissible virus was the cause of the disease.

So far as its transmissibility was concerned, Landsteiner and Popper have shown that certain apes—hamadryads and macaques—could be infected with a disease indistinguishable from infantile paralysis, as we see it in children, by inoculation with an emulsion of the spinal cord of patients dying of the disease. The virus was found to be a filter-passer, and to survive preservation in glycerine for many months. In 1912 Kling of Stockholm succeeded in recovering the virus from washings from the mouth, nose, trachea, and small intestine of fatal cases of infantile paralysis. But the actual microbe causing the disease remained unknown until 1913, when it was isolated, grown on artificial media, and carefully described by Flexner and Noguchi. The success of these investigators where so many others had failed is to be attributed to their discovery of a suitable culture medium. Growths were made anaërobically under a layer of paraffin, in a solid agar medium containing sterile unfiltered ascitic fluid, or brain extract and sterile rabbit kidney. Minute colonies of the virus were obtained, composed of globular or globoid bodies averaging in young cultures 0.15 to 0.3 μ in size, arranged singly or in short chains or masses. Third generation cultures from human tissues, and cultures in the fifth generation from the tissues of experimentally infected monkeys, were found to produce typical acute anterior poliomyelitis in experimental animals.

At the present time, therefore, we are in the possession of a good deal of positive knowledge with regard to the pathogenesis and epidemiology of infantile paralysis. The virus producing the disease has been isolated, cultivated, and employed for the transmission of the disease to experimental animals in investigations that have proved invaluable and indispensable for the increase of our knowledge of its spread among human beings. The virus has been found in the naso-pharynx of human carriers of the disorder, who though they have never apparently suffered from it themselves, yet are capable of transmitting it to others. The virus has also been found in the alimentary tract of patients and experimental animals with infantile paralysis, a fact which may explain why it is that a gastro-intestinal upset sometimes precedes and appears to be the cause of an attack of infantile paralysis. The virus has been proved to reach the patient's central nervous system, in which its main pathological action is exerted, by travelling along peripheral nerves—the sciatic, the nasal nerves, the optic nerves and tracts, for example—to the spinal cord or brain as the case may be, and this is to be regarded as the normal mode of infection in poliomyelitis; gross infection of the blood stream with the virus may also suffice to infect the brain. Evidence has been adduced to show that certain flies, particularly *Stomoxys calcitrans*, the common stable fly, may act as carriers of the disease. In addition the virus has been found on clothes, handkerchiefs, and toys used by patients in the acute stages of infantile paralysis. The careful examination of washings from the mouth or intestine have shown that human beings may remain carriers of the virus for as long as six months. According to Kling, quarantine for infantile paralysis should last at least a fortnight—in New York it now lasts for ten days or thereabouts, we are told—though it is clear that no certainty attaches to any fixed period in this connexion. There is reason to believe that the great majority of adults and many children may be infected with the virus without being a penny the worse for it, either because the virus is enfeebled or because the resistance of such individuals is high. Thus it is probable that every patient acutely ill with the disease has in his immediate environment a number of mild and abortive cases of infantile paralysis that escape observation or detection and diagnosis, and also a still larger number of perfectly healthy people who are all carriers of the infecting agent and therefore potential sources of infection to others. It would seem as if all these persons developed a relatively high degree of immunity to the virus, a fact which may explain the comparative immunity of European towns or villages visited by epidemics of infantile paralysis to the occurrence of further epidemics during the next few years. In fact, as with cerebro-spinal meningitis, the number of the carriers of the infection may be much larger in infantile paralysis than the number of the victims of an epidemic of that disease.

At the present time the notion that infantile paralysis is a disease spread by flies to any great extent is somewhat blown upon. It is believed that susceptible human beings pick it up by contact with other human beings who are carriers of the virus. No other method of transmission has been put forward with any great weight of evidence behind it. Hence the isolation of contacts and cases of the disease appears to be the only method of preventing its spread. No trustworthy method of disinfecting the carriers appears to be known; it would be interesting to find out how far chloramine spray, mentioned on page 229 of the last issue of the BRITISH MEDICAL JOURNAL, would prove effective in the disinfection of the naso-pharynx here. It must be remembered that the British epidemics of anterior poliomyelitis during the last few years have all been small epidemics—for example, those in Norfolk, Suffolk, Staffordshire, Birmingham, and elsewhere during the years 1911 and 1912. In Scandinavia, Central Europe, and America the recent epidemics have been large, the numbers of cases running into thousands, and not being limited to the tens or exceptional hundreds of our own local outbreaks of the disease. Possibly the British climate is less well suited to the virus; possibly our population is more immune to its invasion. Be this as it may, medical men will look forward with interest to see the steps taken by the Local Government Board to minimize the possibility of the introduction of fresh carriers of the virus of infantile paralysis into this country, and to control the spread of the disease should it chance to assume grave epidemic proportions. Here, at least, the Board will be without historical precedent to guide them.

THE OBLIGATIONS OF THE PROFESSION TO DISCHARGED SOLDIERS.

THE effect of the return to civil life of a large number of men discharged from the army, more or less disabled or damaged in health, not only on the administration of the insurance scheme, especially medical benefit, and the duties of panel practitioners, but also on private and on hospital practice, is difficult to estimate, but there can be no doubt that it will be very considerable. Attention has been directed to the point from time to time by many medical bodies. One aspect of it engaged the attention of the Annual Representative Meeting of 1915, and the matter was briefly considered at the Annual Representative Meeting last month, when it was reported that strong representations had been made to the Insurance Commissioners as to the disturbance of the probable sickness incidence of insured persons owing to the withdrawal of healthy lives by enlistment, with the probable return of unhealthy lives into the insured class at a later day. The Council considered that beyond collecting information no further action should be taken at present, but the Chairman undertook that the matter should not be lost sight of once the war was over. There are those, however, who believe that, in view of the great uncertainty as to the duration of the war, and the number of men who are already being returned to civil life, it may become necessary to give close attention to the matter at an early date.

Statistics of the number of men actually discharged from the army on account of disabilities due either to wounds or to lost health are of course incomplete, but it would appear that, excluding men who have undergone amputation, or whose sight has been lost or seriously damaged, and those who have become insane, classes for whom special provisions are made, some 30,000 sailors and soldiers had been discharged down to the end of May, 1916. Since then it is reasonable to suppose that the number discharged from the army owing to the results of injury or disease has greatly increased, for taking a period of from six months to a year as that during which a man is retained under military medical treatment after his wound or breakdown in health, the estimate above mentioned would have reference to a time when the army engaged in the field was very much smaller than it is now. It is useless to conjecture what the number will be by the end of this year, and still more uncertain is the total number of men who will have been discharged disabled within six months after the end of the war, whenever that may be. Of the men so discharged during and after the war probably some 90 per cent. will be insured persons. Save for those cases, so far very limited in number, for which provision is made by the military or civil authorities for special treatment, all of these men will have a legal claim to be treated by panel practitioners, and there is a suggestion that some arrangement will be made by which the remaining 10 per cent. shall also be treated through the insurance organization.

The questions which arise, therefore, concern all members of the medical profession, whether panel practitioners or not, and whether consultants, specialists, or general practitioners.

One of the duties of the Statutory Committee on Pensions established under the Naval and Military War Pensions Act, 1915, is to make provision for the care of disabled sailors and soldiers, officers and men, after they have left the service. This is also one of the duties imposed on local Pensions Committees. The Parliamentary Secretary to the Local Government Board stated, during the debate in the House of Commons on August 8th, that 191 local Pensions Committees were already at work, and that the total number which ought eventually to be constituted was 259. A local Pensions Committee is appointed in accordance with a scheme drawn up by the council of the county or borough or urban district with the approval of the Statutory Committee, and 249 schemes had been approved on August 8th. A scheme must provide that at least the majority of the local Pensions Committee shall be appointed by the council of the county or borough or urban district, and for the inclusion of women and representatives of labour. It must provide also for the substantial representation on the local committee of persons who have, within the area, either as members of the Soldiers' and Sailors' Families Association, or the Soldiers' and Sailors' Help Society, or otherwise, been performing functions similar to those to be performed by local committees under the Act. A county Pensions Committee may appoint district committees, and local and district committees may appoint special subcommittees for special purposes, and in particular a special committee, which must include representatives of employers and of labour, for the care of disabled officers and men. The most important functions of the local Pensions Committees will be to advise the Central Pensions Committee on the allocation of pensions or grants or allowances, and to provide for the health training and employment of disabled officers and men after they have left the services. We have no information as to how these committees are usually constituted, but there does not appear to be an obligation—certainly there is no statutory obligation—that the local Pensions Committees should contain any representatives of the medical profession, although, in view of the duties of these committees with regard to disabled men, this would appear to be a reasonable provision. The Central Pensions Committee itself does not contain any representative of the medical profession, and the Disablement Subcommittee, which the Central Pensions Committee has established in accordance with the Act, is almost entirely lay; in fact, so far as any public announcement has been made, only one surgeon has been nominated to serve on it. This committee will presumably have to settle matters of principle, including many matters in which medical considerations must arise, so that it would undoubtedly have been a great advantage to the country and to the disabled men had the Disablement Subcommittee contained within itself a larger body of medical and surgical opinion. It seems to us even more important that the local Pensions Committees, local Disablement Committees, and district Pension Committees should contain an adequate number of medical members. These committees will have to deal more or less directly with individuals. They will have, for example, to consider what steps should be taken for their health and training; the first entirely, and the second in large measure, are, as we pointed out last week, matters on which no real advance can be made unless medical considerations receive due weight. The point will not be met by the appointment of medical referees, as seems to be the bright idea of some local authorities. That must result in fumbling administration and consequent injustice.

We confess to a great deal of sympathy with the general thesis of the letter by Dr. Rowland Fothergill published elsewhere this week, which we take to be that it is not too early for the medical profession to attempt to forecast the position in which it will find

itself after the war. The questions which arise affect every aspect of professional life, from the sick-room to the laboratory. They include the treatment of the poor law patient, of the insured person, and of the person who before the war was uninsured, many of them because they were earning incomes which took them out of the class to which compulsory insurance applies. They concern all members of the medical profession whether panel practitioners or not, and whether private general practitioners, consultants, specialists, members of the staffs of voluntary hospitals, teachers, or laboratory workers. It is a case in which all must pull together. But the profession needs information, and the British Medical Association, at the instance of the Annual Representative Meeting, has appointed a special committee to report to the Council on the steps which can and ought to be taken. This preliminary report, it is expected, will be ready for the meeting of the Council next October, and as a result a wider inquiry may then be instituted.

COCAINE IN PROPRIETARY REMEDIES.

IN an article in our last issue dealing with the new regulations restricting the sale of cocaine and opium, we pointed out that a most unfortunate fault in these regulations is the exception of proprietary medicines from the operations of the clause requiring that the total quantity of cocaine ordered in a prescription shall be specified. As matters stand at present, proprietary articles containing more than 0.1 per cent. (one part in a thousand) of cocaine can only be sold on the prescription of a medical man, who is thus apparently expected to prescribe preparations which contain unknown but possibly large quantities of cocaine. From information received since the above article was written, it appears that, in some cases at least, proprietors of secret remedies containing cocaine are now recommending their customers to apply to their own medical man for the required prescription, apparently labouring under the impression that the medical profession will be quite willing to assist in maintaining a traffic which it has always regarded as a serious danger to the public. In one particular instance in which a member of the profession properly and with some natural indignation declined to play this part, the vendor of a nostrum containing cocaine is said to have remarked that in the event of the patient being unable to obtain his doctor's signature to the prescription a local chemist would be able to get it signed, a statement which can only be regarded as an unwarranted slur both on the good name of the medical practitioners and the pharmacists of the locality. From the above it is quite evident that, under existing conditions, the medical profession is placed in an extremely invidious position. Further, it seems clear that if nostrums containing cocaine are sold at all it will be impossible to exert any effective control of the quantities of cocaine distributed in this manner. We would invite the serious and early attention of the Home Secretary to this illogical exemption of proprietary articles from a stipulation which is enforced in the case of standard remedies of known composition prescribed by medical men.

THE DISCOVERER OF THE PILTDOWN SKULL.

MR. CHARLES DAWSON, who died at Lewes on August 10th, at the comparatively early age of 52, made the most important discovery of fossil man which has ever fallen to the lot of any one in Europe. In the opinion of experts the gravels of Piltdown Common, in the county of Sussex, were among the least likely deposits in Europe to yield such a discovery. It is highly probable that experts would have continued to think so had the quiet, solid, professional, and ingenious clerk to the Uckfield bench of magistrates not been, in his leisure hours, a keen student of the geology of the Weald. Long before he burst into fame through his discovery at Piltdown he was well known to professional geologists for the new fossil types he had discovered in the more ancient formations of the Weald. In the right sense of the term, his "find" at Piltdown was not the result of a fortunate stroke which might have happened to any one. Mr. Dawson had been interested for many years in the problems broached by Mr. Benjamin Harrison of Ightham and the late Sir Joseph Prestwich—the problems of "eoliths"—whether or not they were of human workmanship. A deposit of gravel, which has neither interest or significance to most men, becomes to men like Mr. Dawson a possible chapter of history. A search is made in the gravel, not only for possible eoliths, but for remains of extinct animals, which will afford a clue to the date at which the gravel deposit was formed. Hence, in 1908, when he found a country road being mended with a kind of gravel which was new to him, he followed up its source to a pit on Piltdown Common, and his first question to the workmen was as to fossil bones, so as to gain a clue to the age of the gravel. The pit yielded both fossil bones and eoliths, and he at once realized its importance. He saw that some of the fossil bones seemed to have a human appearance—an appearance which at once reminded this country lawyer and antiquarian of the Heidelberg jaw, the oldest human fossil bone which had then been found in Europe. It will thus be seen how little Mr. Dawson's discovery had to do with chance. There could have been then in England very few men with a sufficient knowledge to appreciate the nature and importance of all the facts which lay before him at Piltdown. To the workmen the facts, which signified so much to Mr. Dawson, meant nothing. To them all was road metal. Mr. Dawson was a splendid type of that great class of men who give the driving power to British science—the thinking, observant amateur. Without that class to serve as scientific scouts we could make little progress in our knowledge of the past. We are also certain, from what we know of him, that he would have been hurt to think his claims to fame rested entirely on the discovery of those remains out of which Dr. Smith Woodward reared the new human genus of Eoanthropus; he himself would have laid emphasis on his geological discoveries in the Wealden formations, his discovery of the natural gas at Heathfield (now used to light the station and hotel there), and on his invention of special bullets for the destruction of Zeppelins. He was also a keen sportsman, as well as a lover of all records and documents of the past.

MEDICAL TERMS IN THE NEW ENGLISH DICTIONARY.[1]

DR. BRADLEY'S new instalment of the *Oxford English Dictionary* runs *Stead* to *Stillatim*, and between these termini the words inherited from early English are very numerous and few of them are typically medical. At the same time the medical meanings of simple common terms are faithfully chronicled. Thus under steel there comes the definition "iron as used medicinally; chalybeate medicine," and this explanatory paragraph follows: "In early practice iron or steel filings were sometimes administered internally; another mode of exhibition was to give the water in which iron or steel had been quenched when red hot, or had been allowed to remain for some days. The ordinary notion was that 'iron' and 'steel' were different medicines, with similar but not identical therapeutic effect. Steel is now used in untechnical language for any chalybeate medicine, perhaps especially

[1] *A New English Dictionary on Historical Principles.* Vol. ix, Si-Th. Stead—Stillatim. By Henry Bradley, Hon.D.Litt. Oxford: At the Clarendon Press; London, Edinburgh, New York, Toronto, Melbourne, and Bombay. Oxford University Press. Humphrey Milford. July, 1916. Price 2s. 6d. net. (60c.)

iron chloride." The little used terms, salt of steel, flowers of steel, and sugar of steel are also defined and illustrated. Although many of the words are thus of old English origin there are some of Greek etymology, and not a few of them are medical. Thus, from *στέαρ*, fat or tallow, come steapsin, stearate, stearic, steariform, stearin, stearo (in combinations), stearoid, stearone, stearoptene, steato (in combinations), steatoma, steatosis, and that curious racial pathological state, steatopyga or steatopygy of the Hottentot Bushmen of South Africa. Again, the Greek word, *στενός*, narrow, has its little English family of terms, such as stenobregmate, stenocardia, stenocephaly, stenocrotaphy, stenostomatous, and stenosis itself. Stenonian, as applied to the parotid duct, has, of course, quite another origin, coming as it does from Stenonius, the latinized name of Nikolaus Stensen, the Danish anatomist, who first described the structure; indeed it is also known as Steno's or Stensen's duct; *στέρνον* and *στῆθος*, both meaning breast or chest, give origin to a whole group of well-known medical terms, such as sternad, sternal, sternebra (any one of the segments of the sternum, each corresponding to a pair of ribs), sterniform, sterno (in combinations), sternum, stetho (in combinations, such as stethocardiograph), stethoscope (the first illustrative quotation given bears the date 1820, and in 1861 Albert Smith defined it as "a curious instrument, something like a toy-trumpet"), and stethoscopy. From the Latin *stercor-* *stercus*—dung—come some words of ill omen, such as stercoraceous, stercoraemia, stercorin, and stercorolith; whilst from sternutare—to sneeze—are derived sternutation, sternutatory, and sternutative, and the *Dictionary* gives a possible explanation of the saying, "Bless you," to any one who sneezes. Sthenia comes from *σθένος*—strength—and is opposed to the more common term asthenia. Sthenic was the name applied by Dr. John Brown (1735–88) and his followers to diseases characterized by a normal or excessive accumulation of "excitability" or vital power in the system. Sterile and sterilize are not, of course, essentially medical terms; but it is interesting to find that the particular meanings "free from micro-organisms" and "to render free from micro-organisms" go back to 1877 and 1878, when they were used by Tyndall. The current part of the *Dictionary* stops just short of stillborn, and it will be a matter of curiosity to some to learn the definition of that word to which Dr. Bradley's researches lead him.

THE BOARD OF SCIENTIFIC SOCIETIES.

On the initiative of the Royal Society a Board of Scientific Societies has been established to promote the co-operation of those interested in pure or applied science; to supply a means by which the scientific opinion of the country may, on matters relating to science, industry, and education find effective expression; to take such action as may be necessary to promote the application of science to our industries and to the service of the nation; and to discuss scientific questions in which international co-operation seems advisable. The board at present consists of representatives of twenty-seven scientific, including technical, societies. The regulations give power to add to this number, and to appoint as members of subcommittees individuals who are not necessarily connected with any of the constituent societies. An Executive Committee has been appointed, consisting of Sir Joseph Thomson, O.M., President of the Royal Society (Chairman), Dr. Dugald Clerk, F.R.S., Sir Robert Hadfield, F.R.S., Mr. A. D. Hall, F.R.S., Professor Herbert Jackson (Honorary Secretary), Sir Alfred Keogh, K.C.B., Sir Ray Lankester, K.C.B., F.R.S., Professor A. Schuster, Secretary of the Royal Society, Sir John Snell, Professor E. H. Starling, F.R.S., Lord Sydenham, G.C.S.I., F.R.S., and Mr. R. Threlfall, F.R.S. The first meeting of the Board was held on July 20th, when questions relating to scientific, educational, and industrial matters were under consideration, with a view to taking effective steps for co-ordinating the work carried out at present by a number of independent bodies, or initiating action in the case of other matters of national importance.

BRITISH PRISONERS IN SWITZERLAND.

Two new contingents of British prisoners of war arrived in Switzerland on August 12th; they numbered together 862—74 officers and 788 men. One contingent went to Mürren and the other partly to Chateau D'Oex and partly to Leysin. They had a most cordial reception from the Swiss people at all parts of their journey after crossing the frontier. The contingent which went to Mürren was received there by Captain Lopart, the chief medical officer of the district, and by the British Minister, Mr. Grant Duff, who paid a heartfelt tribute to the extraordinary kindness and hospitality shown by the Swiss to every one in distress during the war. The Swiss, he said, were a nation of soldiers, who had a natural sympathy with men who had suffered while fighting for their country, and the whole Swiss people had shown that there was a nobler thing than military glory, and that mercy still existed in the world. The contingent which went to Chateau D'Oex was welcomed there by the President of the Swiss Reception Committee. Speeches made there by Mr. Galland, British Consul at Lausanne, and by Colonel Vansittart dwelt on the warmth of the reception that the British prisoners had met with alike in the German- and the French-speaking parts of Switzerland. When the offer of hospitality was made by the Swiss Government it aroused a strong feeling of gratitude in this country and also in France. The manner in which the Swiss people, by the spontaneous cordiality of their reception, showed that their Government had truly interpreted their sentiments has deepened and broadened our sense of the debt we owe to our kindly friends in the mountain republic. All prisoners transferred to Switzerland under the arrangements now existing are examined by a Swiss medical commission before being despatched, and the British Government has proposed that this commission should visit Great Britain and Germany every quarter.

MEDICAL CARE OF SOLDIERS' FAMILIES IN GERMANY.

It would appear that the arrangements for the free treatment of soldiers' families made early in the war have worked smoothly except in Berlin. Apparently even before the outbreak of the war the chief magistrate of Berlin stipulated that poor law medical officers (*Armenaerzte*) should treat free of charge the families of soldiers referred to them by the military bureau. This duty was conscientiously fulfilled in spite of great difficulties, but at the time of the diphtheria epidemic in the autumn of 1915 the strain became too great, and protests were raised by the medical profession. A series of meetings were held and attempts made to negotiate with the civil authorities with a view to some readjustment of the original arrangement. But the chief magistrate seems to have adopted a high-handed, uncompromising attitude. Though it was decided by the representatives of the medical profession that the original agreement should not be renewed, provision was made for the continued care of soldiers' families till a new and more satisfactory settlement could be effected.

LOCAL SCHEMES UNDER THE VENEREAL DISEASES ORDER.

A deputation from the Representative Body of the British Medical Association was introduced by Sir Clifford Allbutt to the President of the Local Government Board on August 15th, and discussed with him certain points relative to the schemes which local authorities are to draw up for the prevention and treatment of venereal diseases. The deputation represented strongly the opinion of the Association

that to place the medical representatives on the local consultative committee after the scheme had been framed by the local authority, would be to waste the experience of the profession, which should be used by the authorities at the time when it would be most beneficial—namely, in moulding the details of the scheme. The deputation met with a sympathetic reception from Mr. Long, who expressed his strong desire to act in this matter thoroughly in accord with the medical profession. We hope to publish a report of the proceedings, together with the memorandum presented to Mr. Long on behalf of the British Medical Association, in our next issue.

Medical Notes in Parliament.

Mesopotamia.

ON August 9th Sir John Jardine asked whether the river craft used for conveying the troops up and down the Tigris and Euphrates had proper appliances for securing uncontaminated drinking water, and whether sufficient supplies of drugs, bandages, and other medical appliances had reached the troops on the lines of the two rivers. The Secretary of State for War (Mr. Lloyd George) replied that sufficient time had not elapsed since the War Office assumed responsibility for an appreciable change to have been effected in the situation as a direct result of that change of responsibility. The Army Council did not claim that all had yet been done which should be done, and would be done, but on all new boats ordered in the United Kingdom arrangements for securing adequate proper drinking water had been made. Filtration barges were being sent, and supply tanks would be provided at various points. As regards vessels already on the spot, an installation for sterilizing water recommended by the D.M.S. and the late Sir Victor Horsley had been provided on many ships, and would be fitted to the remainder; two tanks holding forty gallons for cooling purposes had been fitted on each vessel. A large number of hospital river steamers and barges had been ordered. All demands for drugs, bandages, and other medical appliances had been supplied, and as the general officer commanding had repeatedly been told to ask for all that was wanted, Mr. Lloyd George said he was satisfied that sufficient supplies were now available on the spot.

In reply to Sir H. Craik, Mr. Chamberlain stated on August 14th that the matters dealt with in the report of the Committee consisting of Sir William Vincent, General Bingley, and Mr. Ridsdale, appointed to inquire into the medical arrangements and transport in Mesopotamia must, in view of the appointment of the Statutory Commission on the operations in Mesopotamia, still be considered as *sub judice*. It would be submitted to the Statutory Commission but would not be published. In addition to criticisms of the Indian military organization—a matter now engaging the serious attention of the Government—the Vincent Commission mentioned certain officers by name as having a grave responsibility in connexion with the state of affairs disclosed by the investigation. For various reasons the Commission was unable to examine any of these officers in person, but they would no doubt be examined by the Statutory Commission, by which their cases and the measure of their responsibilities would be considered. The officers named had vacated their positions, and new appointments had been made to the posts formerly held by them. In reply to Sir Edward Carson, Mr. Chamberlain said that he was aware that everything was not yet satisfactory in Mesopotamia. Though the difficulties of transport had not yet been wholly overcome, and could not be wholly overcome for some little time, he believed that matters were very much improved. The new Director of Medical Services in India had gone to Mesopotamia on his way to India, and had dealt with defects he had found. It was believed that everything possible was now being done to set things straight.

The Under Secretary of State for India stated in the House of Lords, on August 15th, that the Secretary of State had asked him to say that special recognition was given in the report to the very valuable services rendered by the officers and men of the Royal Army Medical Corps and the Indian Medical Service, who, under unspeakable difficulties and with very inadequate staff and equipment, did what they could to mitigate the suffering of their fellow countrymen.

War.

Troops in Salonika.—In reply to a question by Mr. Shirley Benn, on August 10th, the Financial Secretary to the War Office read the following extract from a letter, dated July 26th, from Sir Courtauld Thomson, British Red Cross Commissioner in Macedonia:

> Another striking change here is the progress that has been made in the hospital accommodation and arrangements. I have been in all your general hospitals and many of the casualty clearing stations and field ambulances, and the standard of efficiency seems very high. I have been much impressed by the officers commanding. It is a pleasure to see the pride they take in their own unit and their keenness to try and make it the best of its kind. The last three weeks have been a great strain on every one, but the medical service have risen splendidly to the occasion.

Mr. Forster added that there had been a good many cases of malaria in the Struma Valley, but their number was now lessening.

Nerve-shaken Soldiers.—The Parliamentary Secretary to the Local Government Board, Mr. Hayes Fisher, said that questions in the House of Commons with reference to pensions and grants, and with regard to medical treatment of disabled soldiers and sailors, should be addressed to him as representing the War Pensions Statutory Committee. That committee was considering the question of institutions or some alternative treatment for uncertifiable nerve-shaken soldiers. Under the arrangements made by the War Office such men were retained in military hospitals as long as they required specialist medical in-patient treatment.

Women Doctors in Military Employ.—In reply to Mr. Dickinson, on August 14th, the Financial Secretary to the War Office said that women doctors employed upon foreign service under the War Office would be entitled to receive the same pay and allowances as male doctors similarly employed.

Pensions for Deaths from Disease.—Mr. Grant, on August 14th, asked if the scale of pensions for deaths due to such diseases as cholera, which were incidental to the conditions of campaigning in Mesopotamia, would be on the same scale as pensions appertaining to death on the battlefield or from wounds, and if not, what was the explanation of the difference. The Financial Secretary to the War Office said that the regulations with regard to pensions followed the recommendations of the recent Select Committee in maintaining the specially high pensions which had been granted for a century to the widows of officers killed in action.

Medical Attendance on Munition Workers.—In a written reply to Mr. Macmaster, the President of the Local Government Board has stated that every effort was made to provide suitable medical and nursing services in munition factories. Special arrangements were made with regard to workers in explosive and filling factories, and in other dangerous occupations; and in connexion with these further steps were under consideration. It was obvious that the means for obtaining these services were affected by the demands of the military and naval authorities and of the civilian population.

British Prisoners of the Turks.—In reply to a question by Colonel Yate, on August 14th, Lord Robert Cecil said that the main cause of uneasiness felt as to the treatment of British prisoners of war by the Turks was their refusal to allow them to be visited by American officials, which appeared to be due to the perversity, or worse, of the Turkish Government. The arrival of a considerable number of British prisoners at various places of internment had been heard of, and some private messages received from them were, it was understood, of a reassuring character.

Industrial Poisoning.—The Under Secretary of State for the Home Department stated on August 3rd, in reply to Mr. Anderson, that the number of cases of lead poisoning reported under the Factory and Workshop Act for the six months ending June, 1916, showed a slight decrease; unfortunately there had been a considerable increase in the number of cases of anthrax, and this, he was advised, could only be accounted for by the fact that owing to the heavy demand manufacturers had used all kinds of material. There was reason to hope that the Departmental Committee appointed to investigate the problem of prevention would put forward effective proposals. The fact that the notification of toxic jaundice—namely, jaundice due to tetrachlorethane or certain other poisonous substances used in explosive works—was only made compulsory for the first time this year was the chief reason for the apparent increase in the number of reported cases of poisoning, while the number of persons employed in the factories concerned had been constantly increasing. In reply to a question by Mr. Rowlands, on August 7th, Mr. Brace said that there had been a considerable decrease in the number of cases; satisfactory dopes free from tetrachlorethane were now available in sufficient quantity, and the War Office and Admiralty had directed their contractors to use only approved dopes of this kind.

THE WAR.

WARM ETHER.

THE use of warmed ether is not new. The principle entered with the construction of the Roth-Draeger anaesthesia appliance, which attained some popularity at University College Hospital and elsewhere about ten years ago. The idea has also had advocates in America, where, despite the fact that the administration of anaesthetics has been denied the position of a speciality, all allied questions have received a great deal of study, thanks largely to the influence of Crile.

But both the principle and its adoption are comparatively new on the Flanders front, and the impression so far created is worth noting.

The use of warm ether was introduced soon after the beginning of the present year by the anaesthetist of one of the casualty clearing stations (Captain G. Marshall), under the influence of experiments at Guy's Hospital (Dr. F. E. Shipway). It was taken up soon afterwards at a neighbouring unit dealing with the same class of case (patients requiring severe operations and already partially collapsed), spread to a good many like units along the front, and is now being tried at more than one base hospital.

It was claimed that patients went under more easily, could be kept under with a minimum of anaesthetic, recovered quickly, and showed a lessened tendency to vomiting and bronchial effusion; inquiry at other hospitals where it has been tried leaves the impression that these claims are not unjustified. It is better to speak only of impressions, for at no time and nowhere is it easy to obtain really scientific data as to the comparative value of any special method of administering the commoner anaesthetics, and out here it is especially difficult. There are great differences in the character of the injuries necessitating operation, as also in the time that elapses before the cases reach a hospital. Furthermore, of any two cases which superficially appear strictly comparable, one may have been lying for hours in wet mud and therefore be already on the verge of bronchial trouble, which would have developed whatever anaesthetic or means of administering it were used.

The appliances that are being used are alike only in the fact that they all aim at securing that the temperature of the ether which reaches the patient's mouth and nose shall be above that of the ether which still remains in the receptacles. Some aim also at warming any chloroform vapour which may be used in the first induction of anaesthesia or during the progress of the case, and others even make the same provision for the administration of oxygen, but it may be doubted whether this refinement is necessary. The amount of chloroform required to maintain anaesthesia is so small and its evaporation rate so low, that its cooling effect on inspired air must be very slight. The absorption of heat by oxygen on its expansion in the quantities in which it is used in anaesthesia also appears to be immaterial.

But the conditions in respect to ether are quite different. When it is given (as is usually the case out here) by the open method, the quantity required to produce and maintain satisfactory anaesthesia is considerable, and the rate of evaporation and consequent heat absorption so great, that the moisture on the lint or face mask which is being used may be converted into spicules of ice or snow. In other words, the patient is being made to inspire through an open mouth and at a moment when his heat regulating centres are temporarily paretic, air which, having passed through an ice filter, is in itself in the neighbourhood of zero Centigrade.

To substitute for this the inhalation of air which, although ether-laden, is not much below body temperature, can hardly be anything but a gain from the point of view of avoidance of bronchial irritation and shock; more especially if the general advantages of open ether are simultaneously secured.

To extemporize a machine which will effect this substitution is not difficult. The aim is to make certain of bringing into the mask on the patient's face a vapour, not a liquid, and there are several ways in which this can be done. In the case of chloroform it can be done simply by blowing air through chloroform; in the case of ether by blowing small quantities of ether-charged air or liquid ether into a tube immersed in hot water. In the tube the liquid ether expands and reaches the face mask as a dense vapour.

The requisites are an ordinary wire or Schimmelbusch mask with a cover of flannel or lint, some glass piping and india-rubber tubing, an earthenware jar, a fairly wide-necked ether container, a large cork, and a Higginson's syringe or other equivalent of an air pump. Two pieces of glass pipe, one long enough to reach the bottom, are passed through the cork of the ether bottle. The one is connected to the Higginson's syringe by a piece of india-rubber tubing, and the other to a long piece of similar tubing which, after being coiled inside the earthenware jar, ends under the cover of the mask.

This is the machine in about its most elementary form. It is put into action by filling the earthenware jar with hot water and giving the Higginson's syringe a squeeze as often as the condition of the patient requires. On each squeeze there passes into the immersed coil a certain number of droplets of ether, which are there instantly expanded by the surrounding heat and reach the face mask as a warm vapour.

The machine can be improved by various slight modifications. Thus, it is better to fit the earthenware jar as well as the other bottle with a cork through which pieces of glass tubing have been passed. To the lower ends of these tubes are fastened the ends of the india-rubber tubing which is to be used as an immersion coil and to the upper ends the pieces of tubing which connect this coil with the face mask and ether bottle respectively.

It is also useful to make the vapour tube end in a piece of hollow metal soldered to the wire of the mask. A piece of silver catheter, three or four inches long, fulfils this purpose well, especially if there be bored in it a few extra openings.

There is also, perhaps, some advantage in making the tube between the ether bottle and the Higginson's syringe so long that the latter can lie on the floor under the head of the operation table. In that position it can be pressed from time to time by the anaesthetist's foot, his hands thus being left entirely free. The best hot water container on the whole is one of the vacuum jacketed flasks in common use for keeping fluids warm, but unless the operations generally undertaken are very prolonged an ordinary earthenware jar, such as those in which chemical salts are supplied, does just as well. Finally, to keep the whole appliance compact, it is useful to stand the bottles in a wooden tray with sides a few inches high.

Any one who wishes to make a preliminary test of the kind of effect that will be produced by the apparatus described has only to attach a small funnel to a foot-long piece of india-rubber tubing, and hold the end of the latter in the closed fist. If a little ether is then poured into the funnel the palm of the hand first gets wet, then cold. If, however, the middle of the tube is allowed to dip into a basin of hot water, the palm is not wetted, but warmed. This experiment represents the quality of the effect of the appliance quite accurately, but exaggerates its quantity.

The construction of an appliance which will warm the chloroform as well as the ether is equally simple, indeed, almost identical, but involves the use of certain additional material which may not everywhere be ready to hand. These are a couple of three-way tube-joints, one to join the air pump to the entry tubes of the ether and chloroform bottles respectively, the other to connect their exit tubes with the immersion coil. Unless one of these joints is provided with stopcocks, compression forceps must be used to regulate the current of air; otherwise the ratio of ether to chloroform in the vapour reaching the mask will depend mainly on the height at which the two fluids stand in their respective bottles.

Any copper worker can make three-way joints, but they are to be found ready to hand at the chest-piece ends of most binaural stethoscopes, and in two-way metal catheters for washing out the bladder. Best of all is the top of a broken aspirator, since it has the desired stopcocks.

From the foregoing general description one or two details of some importance have been omitted.

Theoretically it does not matter to which of the two glass pipes in the ether bottle the air-pump tubing is attached, since in either case what reaches the mask will be a vapour not a fluid. Practically, however, the difference is great. If the air-pump tube is attached to the shorter piece of glass pipe the resulting vapour is far too strong.

The length of the tubing between the immersion coil and the mask should just suffice to allow the latter to be placed easily on the patient's face—say 6 in. If it is too long and the temperature of the operating room is low the vapour has time to recondense to some extent.

Finally, as regards the question of making the appliance warm chloroform as well as ether, though the theoretic advantages are small, some of those who have had much experience in the matter claim that there is full compensation for the extra trouble involved in making such a machine. If the chloroform as well as the ether is driven through the immersion coil, it is very much easier to maintain the anaesthesia at the precise level desired and to avoid unintentional variations. This equability is a very great advantage when the operations are prolonged and the vitality of the patient is low.

THE TREATMENT OF GUNSHOT FRACTURES OF THE UPPER THIGH.

Professor v. Ruediger has published an article on this subject,[1] based on the experience during its first six months of the War Hospital in Brunn, of which he is the surgeon-in-chief. The total number of cases admitted into the hospital was 4,175, and the number of deaths was 41. Among the cases admitted were 138 of compound fracture of the upper part of the thigh, and he criticizes very severely the condition in which they arrived at the hospital. In many cases, instead of extending to the chest the splints did not include the pelvis, and commonly, whether of metal or plaster-of-Paris, reached only as far as the fold of the buttock, so that their weight favoured displacement of the fragments. He condemns the failure to remove plaster-of-Paris splints when the men were admitted. It was excused on the ground that it was difficult to deal with from 400 to 800 cases arriving at one time by night transport, but the spread of lousiness had led to a general order that all plaster bandages, as well as other dressings, must be removed as soon as the patient arrived in hospital.

Although in peace he had been in the habit of employing plaster-of-Paris for the treatment of fractures of the thigh he strongly advocated extension in the treatment of war cases, and when the skin would not tolerate adhesive plaster he used a transfixion pin.

He combats the contention, which he attributes to Perthe, that reposition of the fragments must give way to treatment directed against the infection, maintaining that reposition and true alignment of the limb favour free drainage and the natural processes of defence and cure. His conclusion in this connexion is that all cases of compound fracture of the upper part of the thigh should be transported as quickly as possible to a stationary hospital in which they can remain for at least six or eight weeks immobilized in extension.

The general impression given by the article is that the field treatment and transport of cases of fractures of the thigh in the Austrian army has in the past been defective. V. Ruediger concludes by directing special attention to the following points:

1. The necessity for using a good method of fixation in the first instance.
2. The large number of cases which have been sent in with horrible appliances (*Schrecklichen verbanden*).
3. The urgency of educating the medical officers in better methods.
4. Better methods of transport.
5. That fractures of the thigh should be sent to stationary hospitals as soon as possible.
6. That extension from the beginning is the best treatment.
7. That plaster may be used later after the bones have begun to unite.

AUSTRO-GERMAN EXPERIENCES.

The German Soldier's Rations and Clothing.

In the field the daily ration is calculated to yield at least 3,000 calories, 500 of which are provided by albuminous substances. On long marches, and when work is heavy, the ration includes 150 grams of albumin, 100 grams of fat, and 500 grams of carbohydrates. For light work this ration is reduced to 120 grams of albumin, 56 grams of fat, and 500 grams of carbohydrates. The usual ration consists of 375 grams of fresh or salt meat, or 200 grams of smoked meat (sausages, etc.); 125 grams of rice, or 250 grams of peas, beans, or lentils; or 60 grams of dried vegetables; or 150 grams of preserved vegetables; or 1,500 grams of potatoes; or 1,500 grams of equal parts of greens and potatoes; salt 25 grams, coffee 25 grams, tea 3 grams, and sugar 17 grams.

These figures are used as a rough guide, considerable latitude being allowed to commissariat officers. The ration of 750 grams of bread has been found to be too generous, and 650 grams have proved to be ample in the trenches, and even a ration of 500 grams has been found sufficient under certain conditions. When he thinks it necessary, a commander may double the coffee ration or order 0.1 litre of brandy for each man. When meat is not procurable, the bread ration is raised to 1,000 grams; and when the supply of bread is short, it may be supplemented by increasing the meat ration, particularly in a hostile country where a large stock of commandeered fresh meat is to hand.

Every article of clothing of the German soldier has to pass expert criticism before being accepted. The control under which boots in particular are manufactured is very rigorous. It begins in the tanneries, where officers with special training are employed to supervise the various processes. As a rule, the use of oak bark is ordered for the tanning of leather for soles, and rapidly tanned leather is not passed for this purpose. It is claimed that the German top boot has proved during the war superior to ordinary boots with puttees and leggings, which do not keep deep mud out so effectively.

Nephritis.

At a meeting of the German Medical Society of Prague[1] Dr. F. Pick drew attention to the relation of nephritis among soldiers to the season. Between September, 1914, and April, 1915, he saw only 3 cases among a total of 1,711 medical casualties; but between May and November, 1915, he saw 35 cases of nephritis. A curious feature of these cases was the small amount of albumin compared with that of the blood in the urine. Even in early cases there was only 0.2 to 0.4 per cent. albumin, whereas in almost every case there was severe and persistent haematuria, with serious exacerbations after dietetic or other indiscretions. In nephritis under other conditions haematuria usually disappeared long before there was an appreciable reduction of the albuminuria. In other respects there was little difference between the nephritis of war and peace. Dr. Pick's cases ran a benign course, none terminated fatally, and the only case of uraemia observed reacted satisfactorily to venesection and bromine. In the absence of hypertrophy of the heart and a rise of blood pressure, he regarded the nephritis as focal, not diffuse. The excretion of potassium iodide was prompt (seldom more than thirty hours). Only in three cases had the nephritis been preceded by typhoid fever, and in no case was there a definite history of sore throat. A previous history of nephritis was obtained only in two cases. Diplococci, streptococci, staphylococci, and saprophytes were all found in the urine, but not the colon bacillus. The only complaint made by every patient was of exposure to severe wetting; and Dr. Pick was inclined to regard infection, combined with severe wettings, as the principal cause of nephritis in soldiers. Even when every symptom had vanished, he regarded these patients as unfit for further active service.

A Scarlatiniform Rash following Typhoid and Cholera Inoculation.

In June and July, 1915, Professor W. Frieboes[2] observed 10 to 12 cases in which inoculation against typhoid fever and cholera was followed by a rash simulating that of scarlet fever. Indeed, in artificial light, the appearance of the rash was exactly that of scarlet fever; but in daylight it was distinguished by its dusky red colour and a faint yellow tint. The desquamation characteristic of scarlet fever was wanting, and the patients were again quite fit for duty in five to ten days. This outbreak was limited to soldiers who had been inoculated a little earlier—usually three to four weeks—against typhoid fever and cholera. Between July and November there were no new cases, but after November, 11 similar cases cropped up, in every case three to four weeks after inoculation. Mild or abortive

[1] *Wien. klin. Woch.*, May 16th, 1916.

[1] *Muench. med. Woch.*, February 1st, 1916.
[2] Ibid., February 15th, 1916.

forms of this rash were also observed. In the most severe cases vomiting, fever, and bronchitis occurred; but even when the rash was most marked there was always a background of white skin, giving a marble-like appearance to the part affected. Professor Frieboes thought the typhoid vaccine, rather than the cholera vaccine, was to blame.

OBSCURE RHEUMATIC PAINS AMONG SOLDIERS.

Commenting on the difficulty in distinguishing between the true pain of rheumatism and the fictitious pains of the war-weary soldier, Dr. M. Matyas[1] has described a sign which has frequently guided him to the diagnosis of true rheumatism. During fourteen months' service at the front he was consulted by an almost countless number of patients whose principal complaint was of severe pains which were almost unbearable in the evening, and which became still worse at night. He found the temperature in the evening normal—36.7° C. or 36.8° C.; but when he took the temperature at night he was astonished to find in many cases that it was as high as 37.1° C., 37.5° C., and even 38° C. He suggests that though there is no such thing as a "pain-thermometer," the clinical thermometer, frequently used, will often in these obscure cases distinguish the patient from the malingerer.

TREATMENT OF WOUNDS OF THE TESTICLES.

Dr. Levy[2] has found the conservative treatment of wounds of the testicle unsatisfactory; it is not sufficient to apply a first dressing and to trust that immobilization will prevent infection and suppuration. Following Professor Ritter's advice, he makes a rule of giving a general anaesthetic as soon as the patient is admitted to hospital, cutting off all infected tissues, and washing the wound thoroughly. The first step is to trim the wound of the skin by cutting away its edges. The track of the wound is then opened up completely, the contaminated tissues are cut away with scissors or a knife, the resulting haemorrhage is arrested, and the whole wound washed with warm saline solution or soap and water. The tunica vaginalis is then closed, but the wound is left open.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Killed in Action.

CAPTAIN JULIUS HENRY BEILBY, R.A.M.C.(T.F.), is now reported as having been killed in action on April 23rd. He was formerly reported as missing, after a cavalry skirmish on the Egyptian frontier, in which a troop of the Worcestershire Yeomanry got cut off from their horses and captured (BRITISH MEDICAL JOURNAL, May 6th). He was the second son of the late J. H. Beilby, of Edinburgh, and was educated in the medical schools of the University and Royal College of Surgeons, Edinburgh, graduating as M.B. and C.M. in 1889, and afterwards studying at Vienna. After acting as resident physician of the Royal Hospital for Sick Children, Edinburgh, he went into practice at Perry Hall, Bromsgrove, where he was surgeon to the Bromsgrove Cottage Hospital, and certifying factory surgeon. He was medical officer of the Worcestershire Yeomanry (Queen's Own Worcestershire Hussars), in which he attained the rank of captain on September 5th, 1914.

Captain Henry Rylands Knowles, R.A.M.C., was killed in action early in August, aged 26. He was the son of Dr. Knowles, of Heysham Cottage, Heysham, and was educated at Barnsley Grammar School and at Leeds University, where he graduated as M.B. and Ch.B. in 1914. He took a temporary commission as lieutenant in the R.A.M.C. on September 14th, and was promoted to captain on completion of one year's service. He went to the front early in 1915, and was attached to the Royal York and Lancaster Regiment.

Temporary Lieutenant Benjamin Richard Roberts, R.A.M.C., was reported killed in the casualty list published on August 8th. He was educated at Queen's College, Galway, and at the Royal College of Surgeons, Edinburgh, taking the Scottish triple qualification in 1898. After serving as a civil surgeon in the South African war, he settled in practice at Braamfontein, Johannesburg, where he was medical officer of the Central South African Railways.

Killed.

Captain D. H. D. Wooderson, R.A.M.C. (temporary).

Died of Wounds.

Captain Richard Molesworth Dennys, who has died of a wound received during the recent advance, was the only son of Mr. and Mrs. E. A. Dennys of Coleherne Court, S.W. He was educated at Winchester and St. Bartholomew's Hospital, and took the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1909. On the outbreak of war he offered his services to the British Red Cross and the R.A.M.C., but being informed that there were no vacancies, accepted in October, 1914, a commission as temporary lieutenant in the Loyal North Lancashire Regiment, being promoted to captain in the following December.

Wounded.

Captain G. J. Fraser, R.A.M.C. (temporary).
Captain C. H. Wood, New Zealand Medical Corps.
Lieutenant S. J. Cowell, R.A.M.C. (temporary).
Lieutenant H. R. Felton, R.A.M.C. (temporary).
Lieutenant B. Graves, R.A.M.C. (temporary).
Lieutenant P. J. Lane, R.A.M.C. (temporary).
Lieutenant C. W. Sharp, R.A.M.C. (temporary).

Missing.

Surgeon-Probationer Gerald S. Freeman, R.N.V.R., H.M.S. *Lassoo*, August 13th.

Prisoners of War.

A list of sixty-eight officers taken prisoners at Kut was published on August 12th. In it were included the names of six officers of the Indian Medical Service, two of which, Major E. A. Walker and Lieutenant N. Jafar, do not appear to have been given in the previous lists.

DEATHS AMONG SONS OF MEDICAL MEN.

Hartigan, Rev. J. Austin, aged 32, military chaplain serving at Mesopotamia, died in the No. 1 British General Hospital at Amara on July 16th. He was the fourth son of the late Dr. J. T. Hartigan, of Tarbrook, Croom, and has three brothers serving with the colours.

Hudson, Athol, Second Lieutenant New Zealand Expeditionary Force, son of Dr. Hudson, of Nelson, New Zealand, recently reported as "missing, believed killed," aged 34. He was educated at the Waitaki Boys High School and at Victoria University College, where he took the B.Sc. and a national scholarship in chemistry, also gaining the New Zealand Rhodes Scholarship for 1915. He enlisted in the first New Zealand Expeditionary Force, which captured Samoa, and on his return got a commission in the 9th Reinforcement. He held the long distance running championship of New Zealand for one mile and three miles, and the light-weight boxing championship of his university.

Hurd-Wood, John Graham, Captain, son of the late John Hurd-Wood, M.D., of Farnham, killed August 4th, aged 48. Before the war he was in the Army Motor Reserve; in October, 1914, joined as interpreter with the rank of lieutenant, and was promoted to captain in January, 1915. He was serving as staff-captain in an infantry brigade when killed.

Johnstone, Edward James, Private Royal Scots, aged 20, son of J. J. Johnstone, M.B., Tillicoultry, killed in the attack of July 1st. He was educated at Dollar Institution, and had only begun his training as a civil engineer in Edinburgh when his sense of duty caused him to enlist.

Kennefick, Edward Hammerton, Captain Essex Regiment, killed in action on July 7th, was the son of the late Dr. Kennefick and Mrs. Kennefick of Auburn, Clonmel, and grandson of the late General Hammerton, C.B., who served with the Essex Regiment through the Peninsula war and commanded it at Waterloo. His only surviving brother, Captain J. H. Kennefick, is now at the front with the Essex Regiment.

Miller, Henry William Watson, Second Lieutenant Royal Highlanders (Black Watch), youngest son of W. H. Miller, M.D., of 51, Northumberland Street, Edinburgh, killed July 31st, aged 20.

Roberts, R. W. Vaughan, Lieutenant Liverpool Regiment, eldest son of Dr. Vaughan Roberts, J.P., of Blaenau Festiniog, killed July 30th, aged 24. He was educated at Oswestry Grammar School and at Haileybury, and was a prominent member of the Ramblers Football Club and of the Liverpool Northern Cricket Club. At the beginning of the war he enlisted as a private in the Liverpool Scottish, and in May, 1915, received a commission in the Liverpool Regiment, after serving in the ranks in France from November, 1914.

Roberts, William Lawton, Royal Warwickshire Regiment, third son of Dr. R. Lawton Roberts, of Ruabon, North Wales, died of wounds on July 30th, aged 22. He was educated at Bromsgrove School, and was subsequently articled to Messrs. Wragge, Holliday, Godlee, Barrow, and Horton, solicitors, at Birmingham. He enlisted soon after the outbreak of war in

[1] *Muench. med. Woch.*, February 15th, 1916.
[2] Ibid.

the Royal Warwickshire Regiment, and served about ten months in France.

Usher, Isaac W., Lieutenant Royal Irish Regiment, aged 20, killed while leading his platoon in a dashing attack against a strong enemy position, was the son of Dr. Isaac W. Usher, J.P., of Dundrum, co. Dublin.

Wood, Philip, Captain 89th Punjabis, youngest son of the late Brigade Surgeon John Wood, died in hospital as a prisoner at Baghdad, date unknown, of wounds received at Kut on March 11th. He was born on January 19th, 1883, got his first commission on May 8th, 1901, joined the Indian army on November 4th, 1902, and became captain on May 8th, 1910. He had held the post of double company commander in his regiment since June 5th, 1914, and was a member of the force under General Townshend which surrendered to the Turks at Kut last April. He had qualified as an interpreter in Chinese in 1909, and in Japanese in 1911.

MEDICAL STUDENTS.

Webster, Edward Mackay, Second Lieutenant Royal Berkshire Regiment, only son of the late William Webster of Blackheath, was killed instantaneously while in charge of a working party on July 31st, aged 25. He was educated at Tunbridge School and at Guy's Hospital, where he was studying medicine.

White, Gerald John Davis, Second Lieutenant Royal Irish Regiment, previously reported wounded and missing, is now reported to have been killed in action on July 6th. He was the youngest surviving son of Chancellor White, Vicar of St. Bartholomew's, Dublin, and was a second-year medical student at Trinity College, Dublin. Having passed through Sandhurst with credit, he joined the Royal Irish Regiment in August, 1915, and went to the front in March last.

NOTES.

A MOTOR FIELD OPERATING THEATRE.

IN the JOURNAL of November 28th, 1914, in some Notes on a Visit to the West Front, Sir William Collins, who had been a consistent advocate of the motor ambulance since 1902, said "a motor vehicle fitted up as a field theatre or surgery would be of immense service in securing the earliest practicable attention to wounds, thus reducing the number of those infected and offensive arriving at the base." Different views have been entertained by authorities as to the advantage of a field operating theatre on a motor chassis, but we understand that the Wounded Allies Relief Committee, of which Lord Swaythling is chairman, adopted the suggestion of Sir William Collins, and is about to present a very complete motor field surgery or operating theatre to Italy. The vehicle is mounted on a 4 ton 25-h.p. chassis, with pneumatic tyres, twin for the back wheels. Behind the driver's seat is the entrance to an annexe or cab, fitted up with sterilizers for water and instruments, instrument cupboard and drawers, lotion jars, and storage for drums of sterilized dressings, etc. By a sliding door entrance is obtained to the theatre, which is 9 ft. 6 in. long, 6 ft. 6 in. wide, and 6 ft. 8 in. high. A copper sink is in the near front corner, over which taps for water and lotions are fitted. The back has folding doors which open full width, and steps with easy gradients permit the entrance of stretcher bearers. There are no unnecessary interior fittings, space for the surgeon and anaesthetist and assistants being specially kept in view. Illumination, by day, is by top lights of wire glass, and for night work two electric 100 c.p. lights are provided, and a plug for a movable hand lamp. For ventilation the roof lights open and close by an easy mechanism, and there are louvred sides and electric fans. For stretcher cases requiring dressing or minor surgery four upright stanchions are adjustable to the floor to receive the stretcher poles, but for more elaborate surgery a metal operating table is provided. The floor is of sheet lead, and can be swilled and squeegeed, all angles are rounded, and the interior is painted enamel white. Anaesthetist's and dressing tables and stools are provided, and can be firmly secured during locomotion. Tanks for petrol and for 80 gallons of water are furnished, and special care has been taken to make the theatre dust-tight when in motion. A canvas cover is provided to screen light and keep out wet and dust. This vehicle is, we are informed, the first of its kind to be put on the road, and it is evident that much care and thought have been devoted to its construction. We understand that the cost will run into four figures.

THE CANADIAN ARMY DENTAL CORPS.

A report was published recently of the work of the Canadian Army Dental Corps during the nine months July 15th, 1915, to March, 1916. The number of dental operations performed during this period was 201,610, including 66,079 extractions, 86,887 fillings, 15,304 treatments, 10,898 dentures, 10,710 prophylactic treatments, and 11,732 devitalizations. Among the patients were 392 officers.

CANADIAN CASUALTY COMMAND.

By Order in Council a Canadian Casualty Command has been established as a regular branch of the Canadian Expeditionary Force to administer all matters relating to the medical attention required by disabled members of the Canadian Expeditionary Force who have returned from the front, to their pay, and to questions of discipline. This work has been under the direction partly of the Military Hospitals Commission and partly of the Militia Department, and the new arrangement will result in the centralization of the various questions arising in connexion with returned convalescent soldiers. It is announced that Lieutenant-Colonel Sharples, of Quebec, who has been in charge of the dépôt there for returned soldiers, will be given charge of the new command. Units will be established in each military division of the Dominion.

CANADIAN RED CROSS.

The Canadian Red Cross has made the following grants to French organizations: £2,000 to the Société de secours aux blessés militaires, £2,000 to the Association des Dames françaises, £2,000 to the Union des femmes de France, £2,000 to the Fédération nationale des mutilés, £2,000 to the Oeuvre de secours aux réformés No. 2, £2,000 to the various associations for the relief of the blind. In addition to these gifts of money, 5,000 cases of dressings and clothing have been distributed among the French hospitals and 15 motor ambulances have been sent for the use of the French army. The Laval Hospital, an annexe of the Canadian-French sanitary formation established at the hippodrome of Saint-Cloud, is a gift of the Canadian Government. The personnel consists of members of the faculties of medicine, pharmacy, dentistry, and law of the Laval University, Montreal. There are 200 volunteers and 70 nurses. The chief of the medical staff is Lieutenant-Colonel Le Bel.

SURGEONS WANTED.

Field Hospital Units for Southern Russia.

The Joint War Committee of the British Red Cross Society and the Order of St. John of Jerusalem in England is shortly dispatching two field hospital units for service in Southern Russia. We are asked to state that there are still vacancies for two surgeons in these units, and the Committee would be glad to receive immediate offers from surgeons who are willing to proceed abroad and are able to do so under the present War Office regulations. Application should be made, if possible in person, at 11 o'clock any morning, at 83, Pall Mall, Room No. 93, or by appointment at other hours.

England and Wales.

THE DISTRICT NURSING OF MEASLES AND WHOOPING-COUGH.

THE Central Council for District Nursing in London held its annual meeting in February last, and in its report[1] a scheme was put forward for the adequate nursing in the patients' homes of measles, German measles, and whooping-cough by local district nursing associations acting in concert with borough councils. The advantages claimed for the plan were twofold. It was thought that economy would be fostered by making contracts with local authorities and that efficiency would be ensured by the fact that every case would be brought under the purview of the medical officers of health in the respective areas. A further report from the Central Council has recently been issued, indicating the present position, reporting past progress, and suggesting future proceedings.[2] It would appear that little has as yet been done to give practical effect in the metropolis to the powers conferred on sanitary authorities by the Notification of Measles Order. Some progress, however, has been made, and details with respect to eight districts are presented in an appendix to the report. Local authorities, already burdened with numerous calls for money for public purposes, have been deterred by the prospect of added expense, but it is thought that costs may be greatly reduced by systematic management.

A very important decision has been reached, after full consideration and consultation with competent authorities,

[1] *Vide* BRITISH MEDICAL JOURNAL, March 4th, p. 357.
[2] Further Report on District Nursing of Measles, etc. Westminster: P. S. King and Son, Ltd. 1916. Price 1d.

that "district nurses with suitable training and special instruction may be safely trusted to undertake measles cases in the course of ordinary work."

The irregular incidence of epidemic disease renders it desirable that a system of interchange should be established rather than that a permanent staff of nurses should be maintained. As there does not seem to be any probability of obtaining State aid, it is suggested that voluntary effort and private charity must be looked to for help in the near future, if no adequate arrangements can be made with local authorities.

Under the Order, the medical officer of health is empowered to ascertain the home conditions in every notified case of measles, and he would be able to judge whether the services of a nurse were required, and if a definite agreement were made with the local nursing association such services could be promptly rendered. As regards remuneration, no general agreement has been reached, nor does the Council appear to think it expedient to establish a definite rate. The eight instances quoted in the appendix show that there is considerable divergence of practice upon this point.

The Manchester Lock Hospital.

Much concern has been expressed by the friends and supporters of the Manchester Lock Hospital as to the effect which the recent scheme of the Local Government Board for the treatment of venereal diseases will have on it. The part of the scheme which is most likely to affect the hospital is that which provides that the clinics for venereal disease shall not be so separated from the general clinics as to disclose to the public that any particular patient is being treated for some form of venereal disease, the Local Government Board being convinced that from the wish to keep their misfortune secret sufferers might be deterred from going to special hospitals like the Lock Hospital. Evidently, as things are at present, it is hardly possible for patients attending the Lock Hospital to hide the general nature of their disease. On the other hand, the supporters of the hospital ask, Would not the sufferer prefer a special hospital where all the patients are similarly treated? At present there is evidently a good deal of doubt whether any part of the Government grant will be paid to hospitals treating venereal disease only. The Manchester Lock Hospital treats yearly about 250 in-patients and over 7,000 out-patients, and if it is not eligible for participation in the Government grant, it will clearly suffer in competition with the town council's scheme approved by the Local Government Board, and it may be necessary to form some sort of amalgamation with some general hospital. It has done excellent work in the past, and it would be a pity if some place were not found for it under the scheme.

Scotland.

Proposed State Purchase of Liquor Businesses.

The Liquor Trade Finance Committee appointed to advise the Government on the methods and principles on which compensation should be awarded should the Government decide to obtain control of the liquor trade in Scotland by purchase and to prohibit the retail sale of spirits, with or without wines, while permitting the sale of beer not exceeding a certain alcoholic strength, has reported. It states that, whereas in England the brewers are owners of nearly all public-houses, so that purchase of the breweries would give the Government possession of most of the houses, in Scotland this is not so, and the Government would have to deal with about 6,700 persons who hold public-house licences and with about 3,400 grocers. By the legislation of 1913 the principle of local option is in force in Scotland till 1920, and the committee suggests that a lump sum based on an estimate of the annual profits of the trade might be agreed upon as compensation. The committee considers also that it would be necessary to extinguish the licensed grocers' trade in liquor. It assumes that the State would not undertake hotel and restaurant businesses, but that hotels and inns which depend mainly on drink would have to be taken over. The committee does not recommend the purchase of the Scottish distilleries nor of wholesale businesses. It is pointed out the diminution or prohibition of the sale of spirits might be expected to lead to a very considerable increase in the sale of beer, which is sometimes twice as profitable as the sale of spirits; a publican would therefore not be entitled to anything like the amount of his profits on spirits by way of compensation. With regard to wines, the committee suggest that the only basis of compensation would be the actual loss of profits, but it would not recommend the paying of any compensation to clubs.

Ireland.

Dublin Castle Red Cross Hospital.

Sir William Fry, Acting Chairman of the Committee of Management of the Dublin Castle Red Cross Hospital, asks us to make the following correction of a statement contained in a paragraph published in our issue of July 8th, p. 58:

Captain H. V. Stanley, R.A.M.C., was stationed at Dublin Castle Hospital during Easter week in charge of stretcher parties, and did not take over charge of the hospital owing to the illness of the Resident Medical Superintendent until Sunday, April 30th, and not on Easter Monday, as implied in this report. The Resident Medical Superintendent (Dr. W. K. Carew) was in full charge of the working of the hospital during the entire week of the rebellion, namely, from Monday, 24th, till Monday, 30th, and worked strenuously day and night, until the day when peace was declared, when he fell ill from overwork and want of rest.

Canada.

The Medical Council of Canada.

The fourth annual meeting of the Medical Council of Canada took place at Ottawa on June 6th and 7th, under the presidency of Dr. R. J. Gibson, of Sault Ste Marie, Ontario. Among those present were the honorary President, Sir Thomas Roddick, of Montreal, the Hon. Dr. Thornton, Minister of Education in the province of Manitoba, and the Hon. Dr. Brett, Lieutenant-Governor of the province of Alberta.

Reviewing the work of the Council during the four sessions of its existence, the President said that the number who had registered under the ten-year clause had been less than had been expected, but had increased during the past year. The number of candidates sitting for the examinations had declined, but this no doubt was due to the war. He hoped that other provincial boards would follow the example of Saskatchewan, which now accepted only the certificate of the Medical Board of Canada. The ten-year clause referred to provides that any medical practitioner who has been licensed, or has received a certificate, in any province prior to the date of the constitution of the Council, and has been in active practice for ten years, may apply for registration without further examination. The question of reciprocity with Great Britain was brought up but no action was taken, as such an arrangement is impossible until reciprocal relations have been established between Great Britain and each of the provinces of Canada. Alberta is now the only province that has not entered into reciprocal agreement with the Medical Council of Great Britain.

An extract from a letter from a member of the staff of the Canadian general hospitals was submitted to the council, asking that the necessity of giving members of the Canadian Army Medical Corps the privilege of returning to Canada after one year's service be impressed upon the Canadian authorities. The matter was brought to the attention of the Minister of Militia by the Executive Committee, which was informed that if individual application were made such permission would be granted. The Executive Committee also took up with the Minister of Militia the question whether graduates of recognized American medical colleges would be given medical commissions in the American Legion, consisting of Americans who have enlisted for active service with the Canadian Expeditionary Force or similar units, on the same footing as Canadian graduates, and was informed that equal facilities would be granted to American graduates for

service with the American Legion or similar units, provided such graduates were fully qualified and of good standing.

Notice was given by Dr. J. C. Connell, Dean of the Faculty of Medicine of Queen's University, Kingston, that at the next meeting of Council he would introduce the following resolution:

> Whereas it is desirable that this Council shall apply its resources towards the elevation of the standards of medical education in Canada: Resolved, that a scholarship be established to be awarded to the candidate making the highest total of marks in each of the examinations held by the Council, the amount of the scholarship to be sufficient to permit the holder to spend at least a year in professional studies abroad, the direction of these studies to be under a committee of the Council.

Dr. R. E. Walker gave notice that he would introduce a resolution to the effect that a special committee be appointed by the Council to inspect and report upon the various medical schools and universities actively engaged in the teaching of medicine.

The election of officers for the year 1916–17 resulted as follows: President, Dr. W. W. White, of St. John, New Brunswick; Vice-President, Dr. E. P. Lachapelle, of Montreal; Registrar, Dr. R. W Powell, of Ottawa.

THE COLLEGE OF PHYSICIANS AND SURGEONS OF ONTARIO.

At the annual meeting of the Council of the College of Physicians and Surgeons of Ontario Dr. Edmund E. King, of Toronto, was elected president for the council year 1916–17.

Several matters of importance came up for consideration, among them the attitude to be adopted by members of the college towards the provisions of the Ontario Temperance Act, it being resolved that "inasmuch as the Government has imposed upon the medical profession the working out of the Ontario Temperance Act, the council desires to impress upon the profession at large the necessity of adhering to the Act with dignity and decorum." The council adopted the report of the special committee appointed to consider the advisability of establishing a system of licensed midwives in the province of Ontario, which recommended that conditions in the province did not demand the institution of such a system. It was decided that a request should be forwarded to the Militia Council asking that rank and compensation more in keeping with the services rendered be accorded officers of the Canadian Army Medical Corps. The report of the Education Committee was adopted. It recommended, *inter alia*, that the question of uniform matriculation standards be taken up when the Canada Medical Council has issued its report; that the fifth year of the medical course shall be wholly and exclusively academic; that graduates in medicine of such foreign universities as shall enjoy recognition from the College of Physicians and Surgeons shall not be required hereafter to attend a full winter session of lectures and clinics in a Canadian medical college before offering themselves for the college examinations; that the present summer sessions at Queen's University and the University of Toronto be regarded as a full academic year, the college to hold its usual autumn examination early in December to accommodate candidates completing their studies at that time.

THE MEDICAL SOCIETY OF NOVA SCOTIA.

The sixty-third annual meeting of the Medical Society of Nova Scotia was held at New Glasgow on July 5th, 1916, under the presidency of Dr. Kennedy. The officers elected for the year 1916–7 were—President, Professor D. Fraser Harris, of Dalhousie University, Halifax; Vice-President, Dr. Sinclair Miller, of Stellarton; Secretary-Treasurer, Dr. J. R. Corston, of Halifax. The committee on the Copwell Library reported that it had been decided that the library was the property of Dalhousie University, which was to house it, but that the Nova Scotia Medical Society were trustees for the funds, out of which the salary of the librarian and the books purchased were to be paid. The late Dr. Copwell bequeathed his library and the interest on a sum of money to the society and the Halifax Medical College conjointly. When the college was absorbed by the university, the question arose whether the library became the property of the university, and the matter was submitted to legal decision. The library is to be managed by a joint committee consisting of representatives of the university and the society.

Correspondence.

TREATMENT OF THE MAIN NERVES IN AMPUTATIONS.

SIR,—I wish briefly to draw attention to a subject which I feel sure has not received the notice its importance demands. It does not much prolong the time taken in an amputation if the main nerves are drawn well out of their fascial envelopes and an inch or more of them cut away with sharp scissors. The leaving of the nerves "long" in a stump, to be entangled and pressed upon by scar tissues, is responsible for those painful "neuralgic" stumps which are at once a source of intolerable suffering to the patients and of despair to those who have to fit them with artificial limbs. Furthermore, the primary dressings, if the main nerves are not left in the stump, are far less painful. This is a matter of no small moment in the many amputations now done through septic tissues, where the flaps do not heal easily, where subsequent cicatricial tissue is very dense, and where packing of the stump with salines or other applications has to be resorted to. In all the amputations of the leg and upper extremity shortening o fthe main nerves is very important. In the case of the thigh the sciatic nerve retracts, as a rule, and does not give trouble. In amputations of the leg, especially by the long external flap (Farabœuf's method), the anterior tibial nerve, if not removed, is actually laid across the end of the bones! In the amputations of the arm I have in the past seen the greatest trouble from nerve involvement in the stump.

I have only recently operated upon a case of "neuralgic" stump near the shoulder by resection of the main nerves above. I found the median and ulnar nerves swollen, inflamed, and doubtless terminating in the "bulbous" ends so familiar to pathologists. This operation was successful, but the unhappy patient had suffered excruciating pain, and had actually contemplated suicide. I have seen a considerable number of such cases in past practice. I am not aware that the "shortening" of the main nerves is prominently alluded to in the textbooks on operative surgery; I now have not access to the modern works. But I venture to present this practice, which I have adopted for many years, to the consideration of the surgeons employed in the present war.—I am, etc.,

A. MARMADUKE SHEILD,
August 15th. Consulting Surgeon to St. George's Hospital.

THE CHEMIO-THERAPEUTICS OF MR. McDONAGH.

SIR,—I am charged by Mr. McDonagh with not having read his research work nor repeated his experiments on serum, and he says that if I had sufficiently studied his writings I should not have criticized his theoretical views in the way that I have done. I have now devoted careful attention to his Hunterian Lectures, *Links in a Chain of Research on Syphilis (Oxidation and Reduction)*, given in March of this year. It is justifiable to assume that this book gives a correct statement of his work and theories, so far as it is to be found in published form. The references in the following letter are to the pages of this book. Unfortunately the references to the experimental facts on which a considerable number of his assertions are said to be based are not given. But if he will give these, I shall be prepared to look them up. I have not, however, time to read the whole of his work nor to repeat his experiments, and must be content with the *Links*.

This book is rather like a bad dream after an undigested meal of physical chemistry, and it has caused me much trouble in attempting to understand what the meaning is. While numerous passages might be selected which would be seen at a glance by a chemist to be contrary to fact, it is not to be expected that all readers of this JOURNAL possess a similar capacity. Naturally, they must devote their attention to things of more importance in their work. When Mr. McDonagh describes phenomena that are well known and found in textbooks, the meaning is perfectly clear. It is only when he gives his own ideas that statements are made to which I find it difficult to attach a definite signification, and I must ask his pardon if I have misunderstood them. This difficulty is partly due to his use of words in a sense which is not only different from the usual one but is sometimes unintelligible.

Permeability is used by physiologists in reference to the properties of the cell membrane which regulate the passage of substances into and out of the cell, but Mr. McDonagh applies it to molecules (pp. 60 and 76). It is said to be increased by carboxyl groups (p. 117) but no evidence is given. Perhaps it is intended to express the power of passing through the cell membrane, and it must be admitted that a word to express this property is required.

Electrolytic dissociation is spoken of (pp. 45, 62, and 101) as happening *to* ions, whereas these are really the result of it. The word "ionized," with reference to electrolytes in solution, means the same thing, but Mr. McDonagh uses it in a way that puzzled me considerably until I realized that a protein with foreign ions adsorbed on its surface is called by him "ionized" (p. 101).

Adsorption is a much misused word, but it ought only to be understood to express condensation at interfaces between phases, and is therefore a property of surfaces only. The statements that active oxygen is necessary for it to take place (pp. 46 and 107), and that the action is catalytic (p. 52), show that Mr. McDonagh attaches some peculiar meaning to the word, but what this meaning is I am unable to make out. I accept his disclaimer that increased size of particles is not understood by him to mean increased adsorption unless the number increases also. But my mistake is justified by the statement (p. 35) that in order to prove that the adsorptive capacity of the lipoid-globulin particles is greater in syphilis, it is only necessary to show that these particles are larger. Sometimes Mr. McDonagh's adsorption is chemical combination alone. Thus, on p. 136, the sulphur in amino-thio-benzene is said to be in "a more powerfully adsorbed state" than when in the ortho-position as regards the amino-group. Although credit is claimed for not inventing new names, it would surely have been better to do so rather than to give a peculiar and confusing meaning to those in use.

The basis of Mr. McDonagh's theories is the supposed presence in the blood and in the syphilitic parasites of "lipoid-globulin particles" or molecules, together with the changes in their distribution and quantity. These particles are said to form an "oxidase-reducase" system, and their behaviour as oxidizing and reducing enzymes is said to explain not only chemio-therapy in general, but also histological staining reactions, immunity, and anaphylaxis. It is therefore of essential importance to examine the experimental evidence for these properties of the lipoid-globulin particles. Mr. McDonagh states that his theories "follow simply and logically" from "ascertained facts," and are "deduced from established chemical and physical facts" (p. 199). But in his book we continually meet with statements of a highly questionable character given without experimental evidence or reference to published work. While many of these statements are clearly due to misconception, others may possibly be true, but as yet incapable of experimental test, since we do not know the method to adopt. Nevertheless, all these statements are, sooner or later, referred to as "facts." Let me give an example. On p. 178 we find "Fever means an increase of hydroxyl ion concentration and therefore more oxygen. . . . Reduction is only a means of increasing oxidation, as it forms the peroxide necessary for the oxidase system." The next sentence proceeds, "In view of these facts," etc. Perhaps the extraordinary chemical equation given on page 140 is one of the facts:

$$RSSH + 2H + 4OH = RS + RSH + 2H_2O_2 + H^{\cdot}$$

The footnote on p. 152 is an interesting example of logical deduction:

> Intramine injected into the urethra causes a great increase of soluble phosphates and carbonates in the urine. . . . These are the salts which regulate the hydrogen ion concentration of the external phase; therefore this observation proves beyond doubt that intramine acts on the oxidase-reducase system.

It is quite possible that adsorption compounds between lipoids and proteins exist in the blood and tissues, but to assert that they have oxidizing and reducing properties requires more proof than Mr. McDonagh has been able to give. When I used the word "selected" in speaking of this theory which makes oxidation and reduction the key to so many different problems, I had in my mind the probability that the phenomena in question would turn out to be dependent on other less complex and obscure factors. I admit that I did not express my meaning very clearly, but the ease with which even experienced chemists and physiologists can go astray in this region led to the remark. In point of fact, all the evidence that I can find for the view is of a very unsatisfactory nature. On p. 19 it is said that peroxides and peroxidases form part of the system. If so, it would undoubtedly act as an oxidizing enzyme. But no evidence is given, and on looking up the paper by McDonagh and Mackenzie Wallis I find it stated that they could not detect the presence of an oxidase or peroxidases in the particles. The only other evidence is the behaviour towards certain dyes. Unna's view that it is possible in this way to locate places of oxidation in cells is assumed to be true, notwithstanding the fact that Drury has shown[1] that no conclusions of this kind can be drawn. The adsorption of dyes is not dependent on active oxygen. There is no evidence that adsorption *in corpore* differs so fundamentally from other forms, such as that of carbon dioxide by charcoal. McDonagh and Mackenzie Wallis appear to regard dried films as living, even after treatment with alcohol. The reducase properties of the particles are equally devoid of proof. Certain reactions to dyes are again brought forward, but those given depend rather on the sign of the electrical charge of the particles. The explanation of this confusion will be seen presently. The other evidence amounts to the existence of unsaturated carbon atoms in the lipoids of the complex. But mere reducing power does not justify the attribution of catalytic properties as a reducase. Oleic acid itself is not a reducase. My search has not resulted in the discovery of any further evidence for the oxidase-reducase properties of the lipoid-globulin particles. Mr. McDonagh says that he does not suppose that they act at the same time as an oxidase and a reducase. He must surely have changed his opinion, since I can attach no other meaning to the "fact" given on p. 197, "the adsorptive power of the active oxygen in the oxidase-reducase system is more marked than that of the active hydrogen." Also on p. 198, reference is made to "those lipoid-globulin particles which are richer in active hydrogen than in active oxygen."

It gradually became clear to me in reading the *Links* that the author regards as identical the three things represented by the symbol OH, namely, the alcohol radicle in organic compounds (p. 22), hydroxyl ions (p. 22), and hydrogen peroxide (p. 139). This latter is represented as OH + OH (p. 22). On p. 16 the OH group is stated to have reducing properties, so that many things can be accounted for, if we are prepared to accept these statements on Mr. McDonagh's assurance. Among other things, we see how the chemical equation given above has been made out, and why the reactions to dyes due to hydroxyl ions are put down as reductions.

Now we know that in the course of certain reactions oxygen or hydrogen appears in a form particularly active in oxidation or reduction. All that we can say as to their nature is that their chemical potential has been raised by the supply of energy, so that they are able to oxidize or reduce substances which the ordinary forms of these elements have no power to do. But active oxygen is not necessary for all oxidations, although this is stated on page 171. Atmospheric oxygen has a sufficiently high oxidation potential to combine with pyrogallol, as every photographer knows. We do know, however, that active hydrogen is not the same as the hydrogen ion, as Mr. McDonagh believes (pp. 21 and 140). Nitric acid is an oxidizing agent, although it contains hydrogen ions in abundance. Similarly, we find active oxygen regarded as identical with oxygen ions (pp. 139 and 179). The globulin component of the particles is probably an amphoteric electrolyte and able to afford, under appropriate conditions, either hydrogen or hydroxyl ions, but this by no means gives it the properties of an oxidizing and reducing enzyme.

It is obvious that the clinical value of new remedies does not depend on theories as to their mode of action. But I am convinced that the acceptance of Mr. McDonagh's views without better evidence than that given will do much harm both to the theory and practice of therapeutics, in addition to the waste of time involved in attempts to work out further developments of the theories. Before passing to details, I must refer to a startling statement on p. 121. It is said that for two substances to be

[1] *Proc. Roy. Soc.*, 88 B, p. 166.

"absolutely chemically the same, it is necessary that they should be prepared in exactly the same way." This presumably means that "ferrivine" is only to be accepted as such when prepared under Mr. McDonagh's direction.

"Intramine" is a member of the large class of compounds which contain sulphur in organic combination. They have, as a rule, reducing properties, and hence the use of intramine by Mr. McDonagh. But we have seen how little basis there is for his oxidase-reducase theory. A case reported by him on p. 150 is interpreted as showing that an organic arsenic compound, galyl, owed its efficacy to the fact that its oxidative action was brought out by the previous administration of intramine as a reducing agent. But a much simpler explanation would be that intramine is useless, galyl of value. The reason why certain metals are powerfully toxic, others comparatively innocuous, is still obscure, but it is certainly not a question of valency, at all events in the sense used on p. 130, because that implies electrolytic dissociation. The nature of organo-metallic compounds does not seem to be appreciated by Mr. McDonagh. The metal is in organic combination, in direct union with carbon. Such compounds are not electrolytically dissociated with the formation of metallic ions. It is a matter of some difficulty even to suggest a reason for the great activity of certain metals when combined in this way. It may be that the function of the organic part of the molecule is to facilitate passage through the cell membrane and the presentation of the metal, not in the ionized state, to sensitive components of the cell. The use of the terms "toxic" and "non-toxic" with regard to remedies is apt to lead to misunderstanding. We require a substance which is toxic to the parasite, harmless to the patient. But we are unfortunately as yet ignorant of the necessary chemical and physical properties. I fear that Mr. McDonagh's theories will not help us.

Iron is comparatively non-toxic, although in certain forms powerful as a catalyst for oxidations. In organic combination, as in haemoglobin, it seems particularly inert. But are "ferrivine" and "aluvine" organic compounds of iron and aluminium? The names given on pp. 146 and 147, "tri-para-amino-ferric-benzene sulphonate," and so on, suggest that iron is in similar organic combination with the benzene nucleus as is arsenic in salvarsan, but when the formula is examined, it is seen to be neither more nor less than the iron salt of sulphanilic acid. As such, it is not to be expected that it would have any special action different from other ferric salts. Since the name, manganese sulphanilate, is used on p. 144, the form of the chemical name given above may have been used in mistake, but it is nevertheless liable to give a wrong impression. Such compounds would be electrolytically dissociated with the production of ferric or other metallic ions, but it is not true, as Mr. McDonagh states (p. 167), that such dissociation is necessary for therapeutic action. If this were so, organic arsenic compounds would be useless.

The only conclusion that I can come to is that, whatever the "lipoid-globulin particles" may be, they are not an "oxidase-reducase system," and I have grave doubts as to their having any importance whatever. The assumption that oxidation and reduction play a part in the action of antisyphilitic remedies is founded on this, and equally devoid of evidence. Much better support for his theory must be brought forward by Mr. McDonagh unless he is prepared to give it up.—I am, etc.,

University College, London. W. M. BAYLISS.

JUNG'S PAPERS ON ANALYTICAL PSYCHOLOGY.

SIR,—To my mind, your reviewer treated Dr. Jung's book with great moderation. I can fairly say that I am familiar with the writings of both schools, and so far from realizing how deep the cleavage is between him and Freud, I consider it about equal to the difference between Tweedledum and Tweedledee. The cleavage rests, says Dr. Constance Long, primarily on the meaning of the symbolic language of the dream, and the cleavage is analogous with primitive thinking, and Jung sees in the cleavage an attempt to comprehend and point out the further psychological development of the individual, and thus a prospective import is added to the retrospective value of the symbol. It is my density, no doubt, but this is all Greek to me. Dreams and the symbolic language of the dream may be as important as Freud and Jung make out, but it seems to me a mistake to use this symbolic language in waking life.

Dr. Constance Long quotes Jung as saying that when a marriage is crippled, the cause of the unhappiness always lies in a too firm attachment to the parents. They explain that by a too firm attachment they mean an incestuous passion. I do not know what a crippled marriage is, but if it means an unhappy marriage, it seems a pity not to call it so. Jung's assertion needs proof. It needs proof the more that it is opposed to the universal experience of the human race. Dr. Long says we must seek the proof in the unconscious itself. She must pardon me, but she is putting the boot on the wrong leg. It is not for us to seek the proof anywhere. She and Jung make the assertion, and whoso makes an assertion, on him lies the burden of proof. It is for them to prove their assertion if they can, not to send others to find it in the unconscious, or anywhere else. Up to the present they have produced nothing that can be called evidence, let alone proof. Until some evidence is produced, the thing is not worth examination—it is not worth attention.

Dr. Long is good enough to furnish us with a definition of consciousness. She says it is that of which we are aware (that is to say, conscious) at a given moment. I am afraid a definition of a term in terms of itself is not much use. It would be more to the purpose if she would give us a definition of the unconscious, and tell us if it means anything beyond the uncleanly.

I agree that it is not surprising that there should be misunderstandings. When assertions are made, some of which are unintelligible, others are in flat contradiction of experience, and all are offered without a vestige of evidence, it is likely that there will be misunderstanding.—I am, etc.,

Parkstone, Dorset, Aug. 13th. CHAS. A. MERCIER.

THE SOLDIER'S HEART.

SIR,—In the recent discussion on soldier's heart it was stated that the administration of iodine was conducive to hyperthyroidism. According to my experiences this statement is not correct. During the early months of the Gallipoli campaign I was in charge of the enteric ward in a military hospital, and at that time prescribed iodine in about eighty cases of typhoid and paratyphoid B with excellent results, as the mortality was *nil*. It was usually given in 3 m doses thrice daily and increased by 1 m daily until 8 m was reached, and continued frequently for two and three weeks, according to the severity and nature of the symptoms. In those days, when the cases of paratyphoid B were more severe than now and the clinical symptoms were not so well understood—a subnormal pulse, frequently as low as 48, was the rule—the remarkably slow rate was attributed by some to the iodine.

I have also given this drug in minute doses, frequently repeated, with belladonna in extreme cases of dysentery, accompanied by hiccough, vomiting, and involuntary motions, with satisfactory results, and without observing any circulatory disturbance.

It may be of interest in this connexion to point out that in Trentino, where every third person one meets suffers from goitre, it is very seldom that any appreciable disturbance of the circulation is noticed.—I am, etc.,

T. GERALD GARRY, M.D.,
Cairo, July 22nd. Major (temporary) R.A.M.C.

PROPOSED MIDWIVES ACT FOR IRELAND.

SIR,—Dr. Power makes a demand for the exemption of the dispensary medical officer "from the necessity of becoming the unpaid attendant, or the slave, of every handywoman in the locality, while she exercises her *execrable traffic in the lives of parturient women*" (italics not in original), and goes on to say, "The Medical Charities Acts in Ireland provide fully-trained midwives, whose services are given free. . . . The Midwives Act which is necessary in Ireland is one that would compel parturient women to avail themselves of those trained women."

While it is impossible to compel parturient women to employ trained midwives, it is not impossible to make an effort to induce them to do so by supplying a sufficient number of trained midwives and by making it an offence for an untrained or uncertified woman to attend childbirth.

This last condition is secured by the Midwives Act enacting that "an uncertified woman shall not attend women in childbirth otherwise than under the direction of a registered medical practitioner." The uncertified woman is not given any legal status or a licence to attend childbirth under the direction of a doctor: the patient must be the patient of the doctor, not of the uncertified woman. Under the statute it is held that the patient is the patient of the person who undertakes or engages to conduct the confinement whenever it occurs.

The law forbids an uncertified woman to conduct a confinement as a midwife; if in defiance of the law she does undertake to conduct confinements, and on getting into difficulties sends for a doctor, what is the position of the doctor?

As his first duty is to the patient, he must answer the summons and provide for the emergency. If time permits he should inform the uncertified woman that she is a criminal in the eyes of the law, that he cannot assist her to do what the law says she may not do; he should dismiss her and replace her by a certified midwife. In such circumstances the dispensary medical officer can: (1) Requisition the district midwife; (2) if there is no district midwife, or if she is not available, he can himself make temporary arrangements for another midwife, or requisition the relieving officer to do so.

Under the Medical Acts any practitioner who assists, by his presence or otherwise, any uncertified woman to act as if she were certified, is liable to have his name removed from the *Medical Register*. It therefore appears to me that the Midwives Act and the Medical Acts meet the "demand" made by Dr. Power for the exemption of the dispensary medical officer becoming the "unpaid attendant or slave" of the handywoman.

The Midwives Act specially exonerates "any person rendering assistance in a case of emergency." "Covering" implies an arrangement or regular practice of acting in such way as to enable the uncertified woman to do what the law forbids.

Now arises the question whether there are enough trained midwives in Ireland.

Dr. Power says that in Ireland "there are enough trained midwives, if only their services were availed of." I do not think the facts justify this assertion, because: (1) There are still fifty-four dispensary districts in which no midwife has yet been appointed under the Medical Charities Acts; (2) the Local Government Board has hitherto been satisfied with one midwife in each dispensary district. The average area of a dispensary district in Ireland is 42 square miles; some are 60, 70, 80, and a few even 100 square miles, so that, though the population is thin, it is quite impossible for one woman to do all the work, and in some areas two, three, six, or more midwives might be required. Undoubtedly there may be some districts with more than one midwife, and districts with midwives in private practice.

May I briefly explain the Local Government Board regulation for the attendance of maternity cases—under the Poor Law?

Those requiring attendance may requisition it either by (1) requisitions sent direct to the midwife, who must send for the doctor under certain prescribed conditions. (2) Requisitions presented to the doctor. In these cases the doctor cannot send the midwife to represent him; "the ticket casts on the medical officer full and undivided responsibility." He must visit the case in the first instance, and only after he has satisfied himself that the case is one of natural labour can he hand it over to the midwife.

In the fifty-four districts where there are no midwives appointed the dispensary medical officer must conduct all, and in the large districts with an insufficient number of midwives nearly all, the maternity cases or leave them for the handywoman.

It is this want of trained midwives that gives the handywoman her chance and gives the medical practitioner the great trouble Dr. Power complains of in "trying to undo the mischievous work of the infection-bearing untrained monthly nurse" or handywoman.

Presumably Dr. Power will agree with those who consider the work of the dispensary medical officer would soon be considerably reduced by increasing the number of trained midwives.

I remember one of the objections urged against the extension of the Midwives Act to Ireland in 1902 was that it would interfere with the midwifery fees of the dispensary medical officer.

I rejoice that the proposed extension now has such an able advocate as Dr. Power's letters show him to be, and hope Parliament will be induced to accept such amendments as will meet the objections he raises.—I am, etc.

Enniskillen, August 13th. L. KIDD.

SIR,—In answer to Dr. J. Power's question, "I should like to know from Sir F. Champneys what is the difference between an untrained woman, apart from her legal status, registered on the Midwives' Roll, and the woman who will, unknown to the doctor, practise in mostly all cases as a midwife in the guise of what he describes as a *monthly nurse*," I reply that between the two women there is this difference:

The first is subject to instruction, to discipline, and to supervision by the local supervising authority; the second is a criminal who is amenable to the law.

For the success of a Midwives Act a conscientious local supervising authority is essential, and the co-operation of medical men will be of the greatest service.

The loss of life and health to mothers and infants has roused the national conscience to a large extent; what is wanted is a determination to see this set right on the part of local supervising authorities and of the medical profession.—I am, etc.,

London, S.W., Aug. 15th. F. H. CHAMPNEYS.

SIR,—As the representative of the Irish Committee of the British Medical Association on the committee to consider the proposed Midwives Act for Ireland may I intervene in the correspondence now taking place in your columns?

In order to prevent any misconception of my position I may say that I am in favour of the Act, but that I am thoroughly acquainted with the objections to it of my friend Dr. Power and others, and that I think every reasonable precaution should be taken to meet them.

Dr. Power need not fear that the proceedings of our committee will be conducted *in camera*, but I am sure that when he realizes that there is no possibility of any Act except a non-contentious one going through Parliament at present, that an important Government department must be consulted and its views ascertained, and that up to the present only one meeting of the committee has taken place and it has not yet had an opportunity of meeting that department, he will himself be prepared to admit that the time is not yet ripe to ask the opinion of the profession on the measure. That is a matter which will have to wait until something definite can be placed before our colleagues; but what I am anxious to obviate is the growth of a prejudice against the Act among the profession before they have realized its real meaning and the methods by which that meaning is to be translated into practice.

Dr. Power and the committee are absolutely at one in the object which they propose—the banishment of the unskilled attendant from the lying-in couch. Dr. Power would secure this object by making it legally obligatory on every woman to avail herself of the services of a trained midwife. Apart from the fact which was brought before our committee that in a number of dispensary districts in Ireland there is no trained midwife, I do not think that in the present day a House of Commons could be induced to pass such a clause, or, if that miracle were to happen, I do not see how, especially in country districts where the midwife must often have long distances to go, it could be enforced; the patient would often have to choose between going without assistance at all or taking the nearest that was available.

The method of securing the same object which the committee proposes is to make it illegal for any woman who is not registered to attend a lying-in woman for gain. It never will, I suppose, be possible to prevent a neighbour from lending a hand in a case of emergency, but we hope to make it impossible for her to do so from any motive but charity and neighbourly feeling. Now comes, of course, the crux of Dr. Power's objection to the scheme. The "registered" woman need not, under the Act, be a "trained" woman—at least, at first. Dr. Power accuses

ns of throwing a cloak of "registration" over every septic, ignorant, and objectionable Sairey Gamp in Ireland, and in a sense he is right. I am sure that our committee would prefer to do what Dr. Power would himself do, and prohibit every untrained woman from practice at all, but again we had to consider what will pass a House of Commons, whether British or Irish, and when we remembered that the House permitted every quack to register under the Medical Acts, every untrained tooth-puller under the Dental Act, and every handywoman in England under the English Midwives Act, we could not venture to hope for a more enlightened policy in regard to Ireland. There are, however, two bright spots which Dr. Power might contemplate. One is that once the register is established none but trained women can be admitted to it, and death and the advance of years will gradually purge it of its untrained members. This, I know, does not greatly appeal to Dr. Power, who prefers the bird in the hand. Our committee hopes to enable him and every dispensing doctor, if not to grasp the bird, at least to put salt on its tail. I suppose the cardinal sins of the handywoman are neglect of aseptic precautions, drunkenness, and delay in summoning a doctor in difficult cases. These faults will not be amended by putting her on a register, but once on the register she becomes subject to supervision. If she is reported to the Midwives Board for these or other offences she is liable on conviction to be removed from the register, and once removed she can no longer attend a lying-in woman except under penalty of a considerable fine—exactly the position in which Dr. Power wishes to put her. In Scotland the supervision is carried out by the medical officer of health for the county. That office in Ireland is non-existent in many counties, but every dispensary doctor is medical officer of health for his own district, and I am sure that if Dr. Power were granted similar powers to that of a Scottish county medical officer, the district of Ardfinnan would soon be cleared of every infection-bearing untrained "monthly nurse." We see no prospect of instantaneously putting the handywoman out of practice. We believe that in the Act we have a means of gradually putting all but trained nurses out of practice and of very rapidly getting rid of the more dangerous untrained women by the process of removal from the register.

I know that many dispensary doctors view this measure with alarm as they believe it will result in a great increase of their work, due to the desire of the untrained registered woman to safeguard herself by calling in the doctor even to perfectly normal cases. That has not, I believe, been the case in Belfast where a local midwives' register has been in force for some time. Even should it occur as a temporary phenomenon in the country generally, our committee hope that provision will be made in the Act for suitable remuneration to be paid to the doctor for increased work.

As regards the fear expressed by some that assistance given by a doctor in a case where an unregistered nurse is in attendance might be regarded as "covering," I think I am quite correct in saying that unless it could be shown that the doctor had an agreement with the nurse by which he was to be called in in case of necessity no charge of "covering" would lie against him.—I am, etc.,

Belfast, Aug. 15th. R. J. JOHNSTONE.

THE OBLIGATIONS AND CONSEQUENCES OF THE WAR TO MEDICAL AND ALLIED SCIENCES AND THE HONOUR AND INTERESTS OF THE MEDICAL PROFESSION.

SIR,—Every medical practitioner who has given thought to the subject must have felt profound anxiety as to the future of his profession as a consequence of the world-wide war, and must have asked himself what will be its status at the end of the present stage, during the reconstruction period, and afterwards.

At the present moment the Government is forming innumerable committees, many of which have a reference so broad with regard to economics after the war that it is bound to include subjects having reference to public health. Professions, trades, and churches at the moment are reconsidering their position in the empire, and are endeavouring to solve the problems affecting the well-being of their members under the new conditions being created. Also we see social workers and bodies taking the opportunity now offered them, whilst the attention of most is attracted to other things, to push their pet schemes for what they consider to be the improvement of the British race.

The medical profession should realize that it cannot expect any longer to live in splendid isolation; it has become involved in imperial affairs; its individualism and watertight compartment life is gone; as a duty to itself and the empire it must enter more and more into active co-operation with those engaged in the readjustment of social conditions, not looking at problems from the self or class interest point of view alone.

Before the war, on all sides and in many nations, persons and groups of persons were loudly proclaiming that they had discovered *the* problem the right solution of which alone could be expected to bring about an improvement in the economic conditions, and that the only solution was the one they so loudly advocated. Thus we had advocates of equality of the sexes, equality of capital and labour, nationalization of the land, decentralization of government, education, insurance, better housing conditions, temperance. Then came the war, and this babble ceased, but now, already recovering from this world-wide shock, the various advocates, reorganizing their forces, are again up and about; only they now support their hobby by the plea of public health in one form or another. The State, its hands full with other problems, keeps its "importunates" quiet by legislating by regulations; and in a day appear comprehensive medico-sociological schemes—which would have been once the work of weeks or months—that directly affect the public health and indirectly the interests of the medical profession. The public has no time to consider them. It is only necessary to mix up sentiment and sense in the right proportion and then to plead "reconstruction of the empire" in order to break down all opposition. The medical profession is not consulted; a third scattered over the world on imperial service, and the remainder over-busy coping with the home work, finds itself unprepared, inarticulate, often caught unawares by advocates in its midst, and unable to protect itself or the interests of medicine. Proposals are launched which bear on the face of them the impress of lack of knowledge of whence we came, how we came, and what we are (biology), and which are indifferent to the national temperament (psychology)—a not uncommon failing in social reformers.

Believing as we do that public health is one of the pillars on which the British empire will be borne, it is time that the medical profession were up and doing, faced as it is by new conditions. But will the profession unite; have we men with imagination and enthusiasm; are leaders available; will the profession be loyal to such if they are found? Seeing what is going on we can take it that the strife after the war will be just as keen and devastating as the war itself; the reconstruction period will be long, being preceded by further necessary destruction. Many ideals will have to go; cherished habits and customs will be swept away. Unless the profession by intelligent anticipation takes a clear and well-defined line of action on main questions it will find itself just as much at a discount during these periods as it seems to be now. Then public health will suffer, and in so suffering its progress will be retarded. One of the obligations of the profession will have been declined by it.

The public requires educating in matters of public health. It is the medical profession's duty to do this. At once certain statements can be made which the public should be educated to accept.

If medicine and the allied sciences are to make any progress then the profession must be consulted and should retain its freedom. Again, without the approval and cordial co-operation of the medical profession any scheme affecting public health is doomed to languish and will probably fail of its object. On the other hand, we must recognize that unless united the profession cannot expect to be consulted or considered; and thus, failing to protect its own interests, can be of no use to the public at large. How this union is to be brought about is therefore the immediate problem for the profession. Recognized as being individualists, often autocratic, the means for our undoing are in our midst. No league, union, or association to the exclusion of other such bodies should be looked to at this stage as the one to be called on to act. To ignore the existence of each other will only be courting defeat later.

It is time that representatives of all such bodies, scientific and medico-political, were called together in order to see whether they can unite to save the situation. The interests at stake are imperial; the profession must be willing to think and act accordingly.

This union is also a necessity in order that the profession may meet its obligations to its own members. The upheaval of the last two years has placed a third of the profession outside its usual grooves of work. It can be taken as a certainty that many, for various reasons, will never return to them. This fact is a source at once of strength and of weakness—of strength, because many will be free and willing to carry to all parts of the empire the advantage of their education and so help to the improvement of public health wherever they may be; of weakness, because many others may find themselves compelled to look at positions offered which even they themselves recognize are not compatible with the dignity of an honourable profession. It is for those at home, united in one representative body formed to deal with such problems, to safeguard the interests of both of these; by so doing the profession will protect itself and the highest ideals of medical and allied sciences.

The advocacy of the capabilities of any one body to deal through its existing or newly formed committees with the imperial obligations already arising shows a loyalty that is praiseworthy, but it should be recognized that, however assiduous may be the work of a few, it will be a failure in convincing public opinion that such-and-such a line of action is desirable in such-or-such a contingency unless it is supported by the approval of those who cannot be said to be in any way personally interested in the problems, as well as by those whose work in universities, colleges, hospitals, medical politics, and public health has already received the stamp of public approval. The experience gained through many years by associations, unions, and societies formed for medical practitioners will prove of untold value if cheerfully put at the disposal of those now elected to deal with the new conditions arising in the profession and the British empire.

The British Medical Association, at its recent Representative Meeting, referred the following resolution to the Council:

> That a special committee be formed . . . to consider what steps should be taken to organize public opinion, as also the medical profession, for the advancement of medical and allied sciences, and to maintain the honour and interests of the profession in view of the obligations and other consequences likely to result from the war.

It is to be hoped that no time will be lost in commencing the necessary initial investigation of the problems involved.

It is open to all to help, in one or other way, to begin this work, and to ensure that the foundations which must be laid are true and just. Few, however, will live to see the result of the work; but all can hope that, when the British empire is reorganized the medical profession will find that its share in that work is recognized, and itself represented, honoured, and actively co-operating in all parts of the empire in maintaining the ascendancy of a healthy British race willing to undertake the tremendous obligations now being placed on it.—I am, etc.,

E. ROWLAND FOTHERGILL, M.B.,
Temp. Captain R.A.M.C.;
Member of Council and of the Representative Body of the British Medical Association.

Eastern Command Dépôt,
Shoreham-on-Sea, Aug. 6th.

*** At its meeting on July 29th the Council of the British Medical Association appointed the following to be a committee to report to it as to the best method of dealing with the resolution quoted above by Captain Fothergill: Chairman of Representative Meetings, Chairman of Council, Mr. Domville, Captain Fothergill, Mr. Brackenbury, Dr. A. T. Campbell, and Dr. John Gordon.

HOSPITAL TREATMENT OF VENEREAL DISEASES.

SIR,—In the report of the discussion on the treatment of venereal diseases at the Representative Meeting the brief abstract makes me say what I certainly did not intend. The word "than" has dropped out. I pleaded strongly that it was better that this work should be done at the hospitals, in spite of the objections we felt, rather than that fresh whole-time officials should take over another branch of medical practice. We have seen the State official gradually getting a large part of the tuberculosis, fever, and other work, and if some such plan as the present cannot be worked we may have a medical officer for venereal diseases in every district, and other sections of our practice will follow. Such a result might rival the wretched German system which Woodhall tells us of in his day, where each city appointed for life a few officials who had the entire monopoly of surgery, whereas in England every capable man was free to practise provided he gave full proof of his skill and knowledge.—I am, etc.,

Clifton, Aug. 14th. G. PARKER.

EMOLUMENTS OF OFFICERS OF R.A.M.C. SPECIAL RESERVE.

SIR,—It occurs to me that the following figures may be of interest to others. I have recently completed two full years of active service at home and abroad. As a Special Reserve R.A.M.C. officer I had already been trained for my duties and was also required to give my services immediately on mobilization. I had received three retaining fees each of £20—not an extravagant allowance considering that I had to leave my practice without even an opportunity to introduce my patients to a deputy. I wish to compare my receipts during the two years from army sources with that of an hypothetical temporary lieutenant, R.A.M.C., who should have performed exactly the same duties but who, of course, was not already trained, left his practice at his own convenience, and had had no retaining fees.

My total receipts, including allowances for travelling and every other sort of payment, were £877 0s. 6½d., which works out at 24s. a day. (About £600 of this was taxed before receipt, so that I did not actually handle this sum.) The temporary officer would have received for the same duties £997 13s. 11½d.—that is, 27s. 3d. a day.

Deducting from both allowances for equipment on mobilization, for travelling and for extra duty (for example, as surgeon, in charge of hospital, etc.), the two sums would be £786 3s. 0½d. and £926 16s. 5½d., or 21s. 6d. and 25s. 4d. a day. Roughly, my extra experience and extra readiness has cost me £120.

Not very long ago Mr. Tennant stated in the House of Commons that there was not much difference in the pay of Special Reserve (and Territorial, who are similarly penalized) officers. I find £60 a year quite an appreciable difference, and venture to think that most medical men will share that view.

I am aware that you have more than once expressed your opinion that officers in my position were not well treated, but as the question of what each actually does get is complicated by the allowances each may draw, I venture to hope that you may find room for this letter.—I am, etc.,

CAPTAIN R.A.M.C.(Special Reserve).

August 8th.

Obituary.

MR. MORTON ALFRED SMALE, consulting dental surgeon to the Royal Dental Hospital and to St. Mary's Hospital, London, died on August 4th at the age of 69. He was the second son of Mr. William Hurst Smale, and was born in London in August, 1847. He was educated at the Philological School, and studied afterwards for his profession at St. Mary's Hospital and the Royal Dental Hospital. He obtained the L.D.S. of the Royal College of Surgeons of England in 1876 and became a Member in 1878, having received the diploma of L.S.A. in 1877. Mr. Morton Smale was appointed dental surgeon, first to the West London Hospital, and then to the Westminster, and lastly in 1891 to St. Mary's, holding the latter appointment until 1907. He became honorary secretary of the British Dental Association, but declined the office of president both of that association and of the Odontological Society. It was largely through Mr. Morton Smale's energies that the new Royal Dental Hospital was built. In his early professional career he took an active share in the discussions of the Odontological Society of Great Britain. Of special interest were his observations on the use of cocaine in dentistry. He first employed it in 1884 and published his original experiences in the *Westminster Hospital Reports* for 1885. He wrote also on mechanical dental contrivances, such as operating

chairs, saliva injectors, and special instruments for crowning. The most important literary work associated with his name is the volume on *Diseases and Injuries of the Teeth*, originally prepared in conjunction with Mr. J. F. Colyer, who when the third edition was required took over the entire work still known and popular under the modified title *Dental Surgery and Pathology*. Mr. Morton Smale was elected president of the Dental Section of the British Medical Association at the Leicester meeting in 1905, and conducted with great discretion the discussions of several papers of high importance. Eight years later he was made president of the Stomatological Section of the International Medical Congress in 1913. He held for twenty years from 1884 the office of Dean of the Royal Dental Hospital, and was for twelve years examiner in dental surgery to the Royal College of Surgeons. He was also a member of the Board of Studies in Dental Surgery of the University of London.

Dr. Frederick Churchill, who died recently at his residence in Kensington, aged 73, was the son of Mr. John Churchill, J.P., of Wimbledon, and studied medicine at the University of Edinburgh and St. Thomas's Hospital. In 1867 he became M.R.C.S.Eng. and M.B., C.M., and L.M.Edin.; in 1871 he took the diploma of F.R.C.S.Eng., and in 1873 the degree of M.D.Edin. was conferred upon him with honours. He became surgical registrar to St. Thomas's Hospital, and resident medical officer at the York Road Lying-in Hospital. Dr. Churchill was for many years in practice in South Kensington, and was long surgeon to the Victoria Hospital for Children, Chelsea. He wrote a memoir of considerable merit on mechanical distortions of the spine, which was published in the Journal (vol. i, 1871, p. 638). It was based on an instance of curvature of the spine dependent upon an inequality in the length of the lower extremities, and associated with hypertrophy of the right patella. He was also the author of a book on face and foot deformities.

Dr. William Ward Leadam died on July 14th at his residence, Inverness Terrace, W., aged 79. He had been a Member of the Royal College of Surgeons of England for fifty-eight years; in 1860, two years after he took that diploma, he received the degree of M.D.Edin. and took the gold medal. For a time he was assistant surgeon to H.M. convict establishment, Portsmouth, and afterwards surgeon to H.M. Consulate in Siam. He practised for many years in Gloucester Terrace, Hyde Park, and long held a leading position in that part of London, making many friends both among the profession and the public. He was a man of sterling character, and withal genial and hospitable.

Dr. Samuel M. Brickner, an associate editor of the *American Journal of Surgery*, to which he contributed largely on subjects connected with his speciality—obstetrics and gynaecology—died on May 5th at Saranac Lake, at the age of 49. He edited, from its foundation till his death, *The Medical Pickwick*, a magazine probably unique among medical journals, in which he wrote articles—historical, humorous, and biographical—showing a wide range of knowledge and a cultivated literary taste. He had decided talent for verse, and many of his poems appeared in lay papers. Some of these, notably "To R.L.S.," written for the dedication of the monument to Robert Louis Stevenson at Saranac Lake, "The Antivivisectionist," and "The Red Cross Nurse," were widely quoted in the general press.

Dr. William Corsar Anderson, a member of the Dundee Branch of the Association, died on July 26th at his residence, King Street, Dundee. He was the son of the Rev. Dr. Mark Anderson of St. Andrews, and was educated at Clifton College and the universities of St. Andrews and Edinburgh. In 1892 he took the diplomas of M.B. and C.M.Edin. After holding for several years the appointment of assistant medical officer in the Fife and Kinross Asylum, Cupar, Dr. Anderson settled in Dundee ten years ago, and soon acquired an extensive practice. He became very active in ambulance work, and was lecturer to the East Station team, which a few years ago won the challenge shield. Dr. Anderson had been in failing health for the last two years, yet almost to the very end he attended to his public and private professional duties.

Dr. Elias Jones Roberts, late of the East Indian Railway, died at Portledge House, Newbridge Hill, Bath, on August 2nd, aged 94. He was born on February 29th, 1822, and educated at Edinburgh University. He graduated M.B.Lond. in 1852, took the diploma of M.R.C.S. in the same year, and that of M.R.C.P. in 1860. He was for many years in the medical service of the East Indian Railway, stationed at Asansol, in Bengal, but retired so long ago that probably there are few, if any, Europeans in that country who remember him.

The Services.

INDIAN MEDICAL SERVICE.

The open competitive examinations for admission to the Indian Medical Service have, as has already been announced on several occasions, been suspended during the continuance of the war; such appointments as may be absolutely necessary are made by nomination of the Secretary of State, who is advised by a selection committee. Applications for appointment should be addressed to the Secretary of the Military Department, India Office, Whitehall, S.W., and should contain concise particulars of the applicant's medical degrees and career. Applicants must be over 21 and under 32 years of age at the time of application. Particulars regarding pay, promotion, etc., in the Service can be obtained from the Secretary, Military Department.

EXCHANGES.

Captain (Temporary) R.A.M.C., in field ambulance, France, desires exchange. Home station preferred. — Address No. 3200, British Medical Journal Office, 429, Strand, W.C.

Captain R.A.M.C., at present in medical charge corps troops, requires exchange, hospital preferred, in or near London.—Address No. 3196, British Medical Journal Office, 429, Strand, W.C.

Captain R.A.M.C.(T.), in provisional unit, desires exchange with medical officer abroad in casualty clearing station, hospital dépôt, ambulance train (home or abroad), or hospital ship. Failing these he would be glad to hear from any one in artillery who does not wish to go abroad, or M.O. in hospital abroad.—Address No. 3198, British Medical Journal Office, 429, Strand, W.C.

Medical officer serving with field ambulance in Egypt wishes to arrange transfer with other officer at present serving at home (rank, lieutenant or captain).—Address No. 3197, British Medical Journal Office, 429, Strand, W.C.

Medical officer with unit about to proceed to the front wishes, with permission of Director-General of Medical Services, to transfer to any other post with reasonable likelihood of remaining in this country.—Address No. 3199, British Medical Journal Office, 429, Strand, W.C.

Medical News.

Lord Justice Pickford has been added to the Dardanelles Commission.

Mr. Arthur Barker, Professor of Surgery at University College, London, who died on active service at Salonica, left property of the gross value of £12,243.

Of the 748 past and present students at St. Thomas's Hospital Medical School who have entered the navy and army services, 620 joined since the commencement of hostilities; 24 have died on service, 56 have been mentioned in dispatches, and honours have been conferred upon 27.

Provincial readers will be amused to learn that it has required several months of newspaper agitation, and an appreciable expenditure of parliamentary time, to give the Home Secretary the courage to make a regulation which will enable him to prohibit the use of cab whistles in London during the hours of the night.

Before the war German chauvinism found an outlet in scientific compilations purporting to give abstracts of papers by the entry after the title of many papers by British or French men of science of the words "Nothing new." At present the British Press Bureau writes after the German accounts of the results of their Zeppelin raids, "Nothing true."

Madame Paul Brouardel, widow of the distinguished professor of medical jurisprudence who was dean of the Paris Medical Faculty, has accepted the presidency of the War Medical Assistance Fund. The daughter and pupil of the famous painter Lapierre, she is herself an accomplished artist. She gave a collection of her water-colour sketches of landscapes to be sold for the benefit of the wounded, and within a few days £920 was added to the fund, which on July 1st amounted to more than £20,800.

A SPECIAL hospital for 250 Canadian soldiers suffering from injuries or disorders likely to be benefited by treatment at Buxton, given by the Canadian Red Cross, was opened by the Duchess of Devonshire on August 11th. Colonel Charles Hodgetts, Commissioner of the Canadian Red Cross, presided. Major-General Sir Sam Hughes paid a tribute to the admirable work done by women for the Canadian Red Cross Society; it was, he stated, practically run by them. Surgeon-General Carleton Jones accepted the gift on behalf of the Canadian Medical Service, and Major Guest, the Commandant, said that the experience of the treatment given in Buxton during the short time the hospital had been at work had been most satisfactory. The Duchess also paid a visit to the Devonshire Hospital, where over 200 military patients are now under treatment, and to the V.A.D. hospital.

THE nineteenth annual meeting of the Medical Library Association took place at Detroit on June 12th, and at Ann Arbor, Michigan, on June 13th. The Canadian libraries represented were the McGill Medical Library, Montreal, and the Academy of Medicine, Toronto. Among the points under discussion was the arrangement of bibliographical material; it was suggested that all references should be given uniformly, according to the year, volume, and page; and that instruction in the use of the various indices and bibliographies would be of practical value to the medical worker. Another subject discussed was the difficulty experienced by libraries in securing copies of reprints, and authors were asked to be more generous in this respect to the various libraries of the association. A resolution was passed asking that the third series of the *Index Catalogue* of the Surgeon-General's Library should be printed, as the discontinuance of the series would be a great loss to the libraries and the medical profession.

THE *Tropical Diseases Bulletin* for June 15th, 1916, contains notes on the laboratory reports from Jamaica and Khartoum. The chief interest of the report of the Jamaica Government bacteriologist, Dr. H. H. Scott, lies in the investigation of the so-called vomiting sickness. He brings forward strong evidence to show that this disease is really due to poisoning by the fruit of the ackee, and that it is not a bacteriological entity as was originally supposed. The report from Khartoum deals with research work carried out at the Wellcome Tropical Research Laboratories during the year 1915. It is edited by Dr. Chalmers, the director, and contains work upon streptococcus infections, amoebic dysentery, skin diseases, kala-azar, beri-beri, etc. There is also a chemical section, in which Messrs. Beam and Freak point out that in hot countries like the Sudan blood stains alter more rapidly than in more temperate climates; in consequence the Teichmann test has been largely abandoned and a new test devised which is equally applicable to blood stains, whether fresh or old, as well as to stains partly removed by soap and water or mixed with earth, or to old stains on rusty iron which have been exposed to strong sunlight for several days.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

THE telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are: (1) EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology Westrand, London*; telephone, 2631, Gerrard. (2) FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westrand, London*; telephone, 2630, Gerrard. (3) MEDICAL SECRETARY, *Medisecra Westrand, London*; telephone, 2634, Gerrard. The address of the Irish office of the British Medical Association is 16, South Frederick Street, Dublin.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

NOCTURNAL DYSPNOEA ASSOCIATED WITH NASAL OBSTRUCTION.

DR. J. LEWIS THOMAS (Newport, Mon.) writes: It must be the lot of any one who examines many chests to find numerous instances of nocturnal dyspnoea associated with nasal obstruction; the most interesting are those in which the obstruction consists in developmental defects rather than that produced by chronic inflammatory action. The sudden onset after a spell of sleep is common to both sorts; but in the former, with, say, a deflected nasal septum as the cause, the asthmatic attacks do not commonly come on during the day. Indeed, for a more or less prolonged period there are no physical signs to be discovered in the day to account for the nocturnal dyspnoea; and very often the case does not come under examination until more frequent and more severe attacks compel more serious attention to symptoms and signs.

A typical case is a boy of 10 or 11 years of age, presenting some deflection of septum and thickening of the middle turbinate mucous membrane resulting from the hereditary deformity. The facies is quite different from that of the adenoid patient, mouth-breathing not being of necessity present. Examination of the chest reveals retraction of both apices, as a rule, and engorgement of the superficial veins back and front. Prolonged expiration is not marked, at any rate between the attacks; and moist sounds may be almost absent. But the respiratory function is very poor, and the chest soon becomes emphysematous, and the patient gradually debilitated.

It is difficult to persuade the friends that the deformity is the cause of the trouble, because of the absence of attacks during the day; and the situation is not eased when the medical attendant is not able to explain this apparent anomaly. It does not help much to say that there is a close connexion from a developmental point of view between the brain, nose, and lungs, and that inhibition plays a large part in our daily and nightly carrying on.

The urgent question is, What's to be done to remedy the complaint? To say, as is commonly done, "that the lad will grow out of it," does not mend matters, and as a rule results in the transfer of the patient to another practitioner or sentences him to another round of quack nostrums and practices. The surgeon who does these things says that an operation to remedy the deformity of a growing nose is not very successful; and one can readily understand how difficult it is to prevent Nature reverting to the original model.

Much additional damage to the chest will result by waiting until the patient arrives at his sixteenth or seventeenth year, and one more individual is added to the number of candidates for pulmonary tuberculosis.

Meanwhile, what is to be done for the growing lad? for all parties concerned soon tire of the periodical use of the cautery—a practice in itself not very cheering or promising. What procedure is there in these circumstances that can vie with enucleation of the tonsils and scraping away of the adenoid vegetations in remedying a somewhat similar condition?

LETTERS, NOTES, ETC.

ATTENDANCE ON SOLDIERS BY CIVIL MEDICAL PRACTITIONERS.

LAST June several correspondents complained that they were unable to obtain payment from the War Office for services rendered as civil medical practitioners. Other correspondents said that they had had no such difficulty, and a Major R.A.M.C. suggested that possibly those who had failed to receive payment had not complied with all the regulations of the Royal Pay Warrant. The following letter from an acting medical officer appears to show that delay may still occur, even when all official requirements have been fulfilled:

> At a very early period of the war civilian surgeons of mature experience were earnestly appealed to to act in place of those who had been called away. I was appointed to a famous Territorial regiment, and made ducks and drakes of my private practice in order to fulfil my military obligations. Every bit of red tape in the way of "indents," "forms," and what-not has been attended to in strict accordance with official instructions, but do what I will, write as I will, I cannot get my dues paid to me. I have examined well over a thousand recruits, for which service so far I have not received a farthing. I have administered many hundreds of antityphoid injections, and performed the most multifarious duties, and yet over fifteen months' pay and fees are still outstanding. I am told that there are very very many civilian officers in the same plight as myself. Why should a number of hard-working officers be kept waiting for twelve, fifteen, and even seventeen months for their pay? Cannot something be done to end a glaring injustice?

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